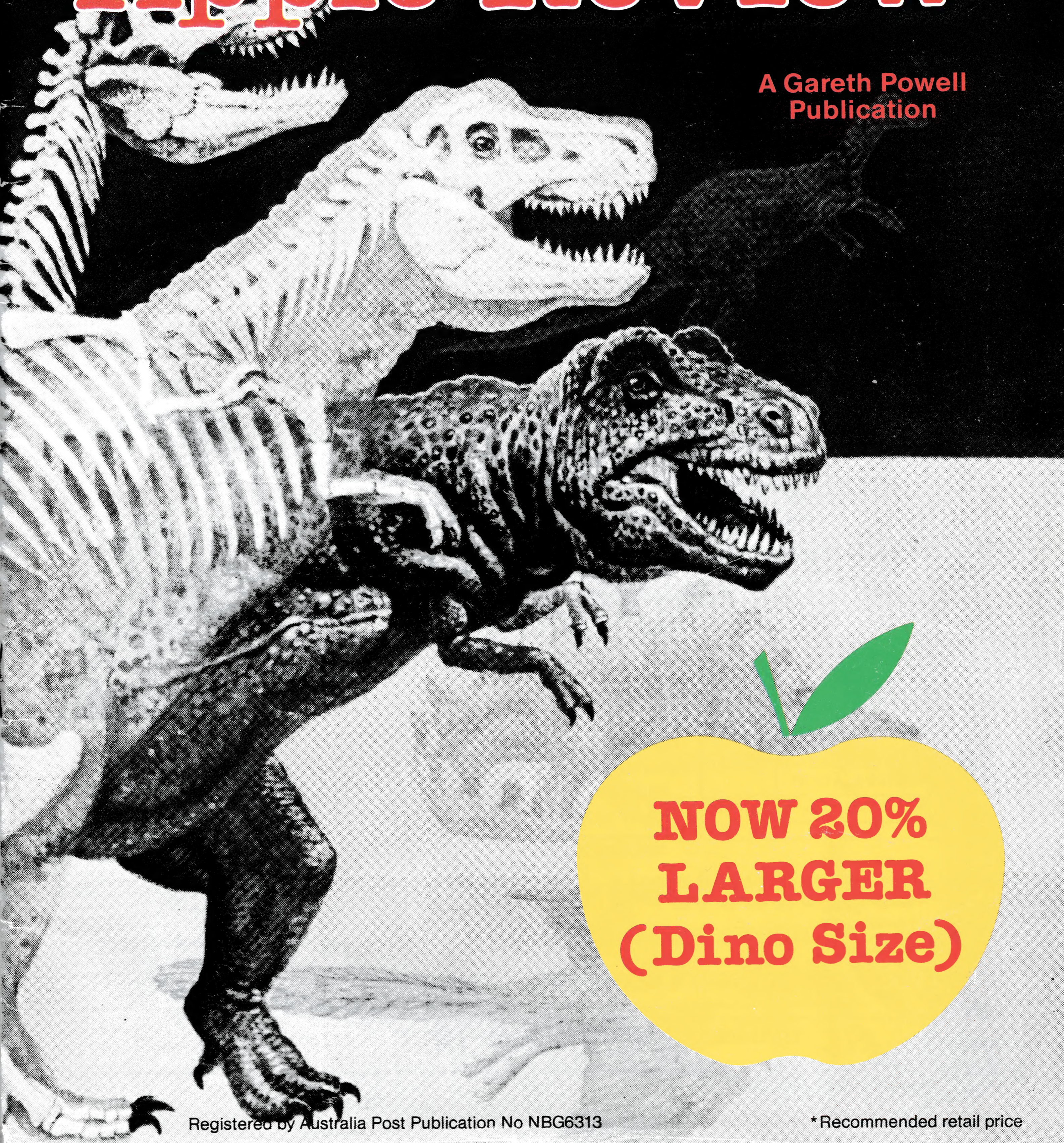
March Vol. 2 No. 2 $3*

The Independent Magazine

The Australian Apple Review

A Gareth Powell Publication



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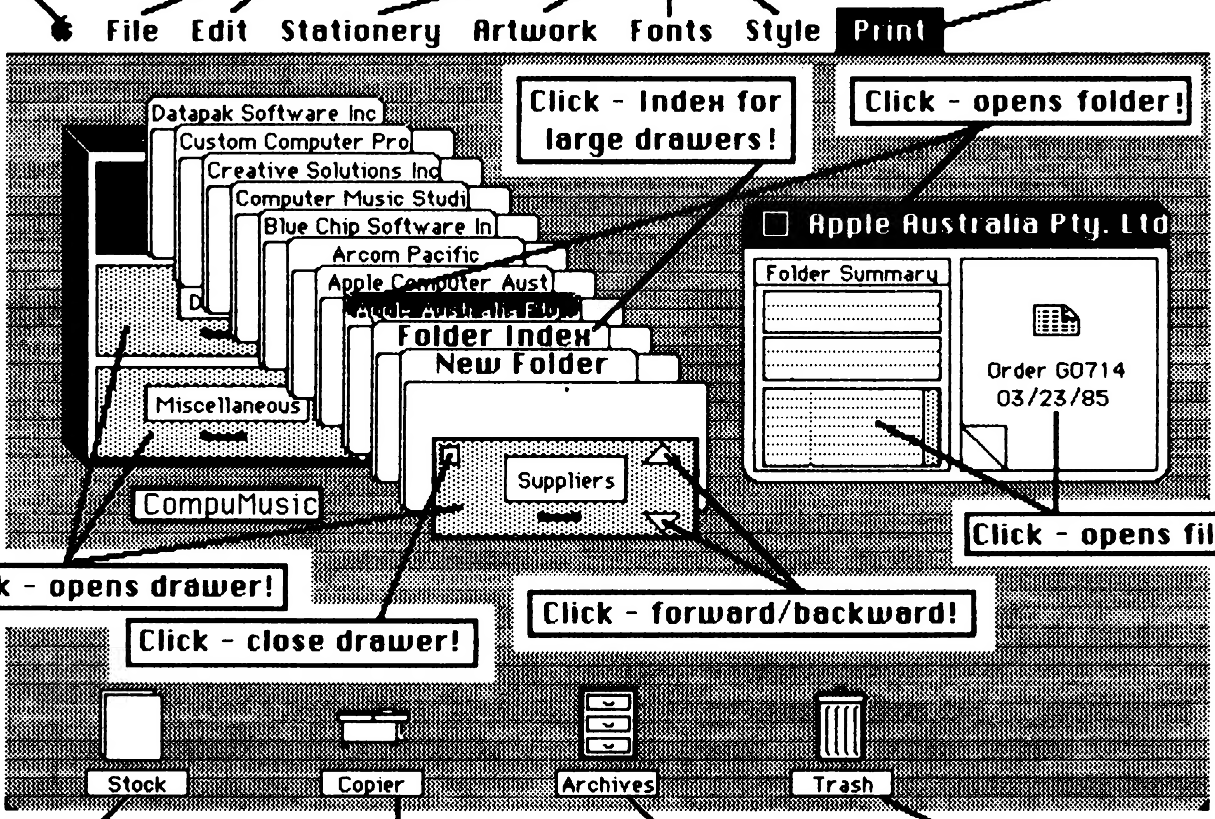

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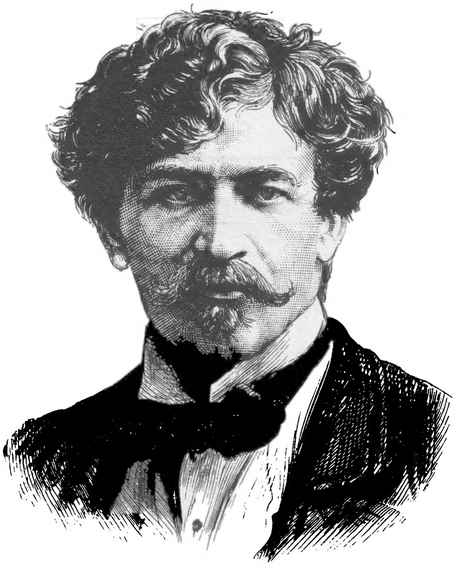
Editorial

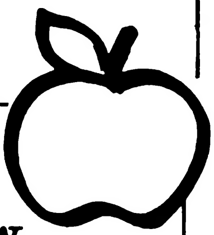


"The Flashing Cursor writes; and
having writ,
Moves on: nor all your Piety or WP
Shall lure it back to cancel half a
Line (control escape),
Nor all your Tears wash out a Byte of
it."

I have started this editorial with a little culture in order to allay any fears about the direction of the Apple Review. You may notice that the magazine is thicker, and not simply with advertisements. More content, more Australian exposure and much more Apple – along with the charm of Gareth himself – is the direction in which I see the Review progressing.

You as readers, I encourage to contribute in the form of Letters to the Editor, with suggestions, problems, likes, hates or even code. I have always seen the Apple Review as more than just another computer magazine. To me it has been as a conversation with a friend committed to Apple the computer and not to Apple the company. I hope to continue in this tradition.

Gene Stephan



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News

Good onyer mate

Congratulations to Applied Technology! The Swedes are going to introduce Microbees into their education system in quite hefty numbers and that's good going for this local manufacturer. I wish them well, firstly because they're out there trying and secondly because I see this as hefty numbers less for our kids. Get a move along, Apple Australia, before the IBMs get in.

Jazzy Mac

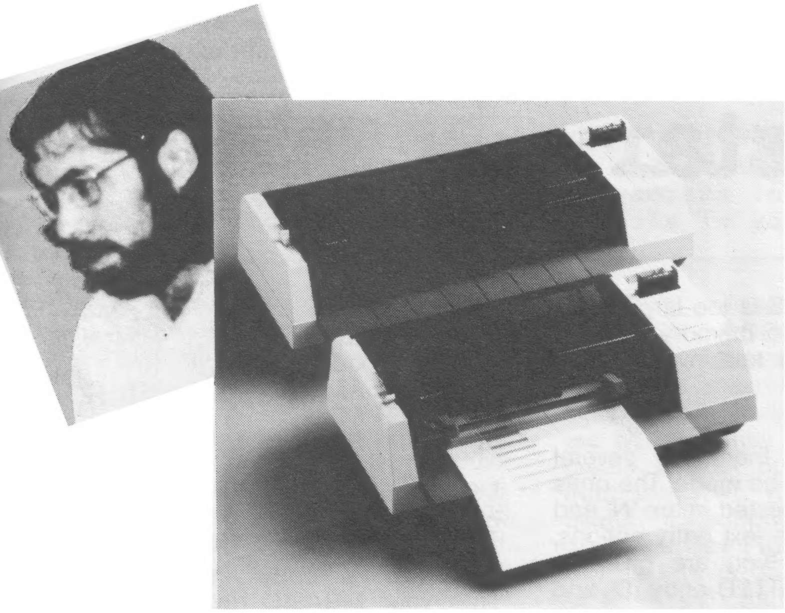
Jazz for the Mac – the latest from Lotus is soon to be released in Australia. Jazz is Lotus's third major product, the first being 1-2-3 and the second Symphony, both of which are for the IBM and compats (providing that the IBM graphics adapter is present).

Those who have used 1-2-3 know exactly why it's the top businss seller of all time in both the States and around the world. Those who haven't used it have been denied an absolute pleasure in ease.

1-2-3 is three programs in one – a spreadsheet which forms the basis and is so simple to use that even my 8-year-old has had a bash at it. a graphics module which allows virtually immediate visualization of any section of your spreadsheet as a graph, and a database. Symphony extended this concept to include a WP, telecommunications and a programming language. Sound like Appleworks? Not really, 320K is minimum on board memory required and it comes on about a half a dozen 360K disks – a trifle more uptempo than anything on the Apple.

All this could be depressing except that the time has now come for Apple users to have their turn, even if they need a fat Mac (512K) and a second drive (has to be Apple) to do it.

Jazz, expected in Australia in early April at a cost of $895 or thereabouts (ouch, but the people at Imagineering do have to place food on their tables



FACIT 4550 and 4451 with a rare glimpse of Woz

just like the rest of us mortals), consists of 5 modules – WP, Worksheet analysis (jazzy spreadsheet), data base, business graphics and communications. Jazz supports the mouse for data input and of course has all the other Mac features such as icons etc.

What about power? Well, power is the name of the game. Jazz allows several files to be active at the same time. This means that if for example you change or modify data in your spreadsheet, and your WP file is open, then your WP document is upgraded or modified AUTOMATICALLY. Lotus call this a "hot new feature", and well they might because you control what is upgraded and what is not. At present I am told that Jazz still has several bugs. These bugs cannot be too serious (famous last words) because Steve Jobs after seeing the pre-release called it the "best Mac product I've ever seen". We certainly look forward to it.

AI

In the words of one Barry Jones, MP, "How do you come to terms with the development of machines that are smarter than most of the labour force . . ?" (I wonder if politicians are included?). Well, the easiest way is to establish a Commission and title it something catchy like "Commission for the Future". Then, put an entrepreneur type – an ad exec for instance – at its head and give it some rather broad guidelines like "go for it!".

Sound slightly far fetched? The Commission for the Future really does exist, and the seven commissioners have just been appointed. The objective of the commission will be to increase our awareness of the spectre of hi-tech. Thank you Barry for thinking of us, our tax dollars, and all those poor men, women and children who will doubtless be assisted through gaining an understanding of "the possible options for economic, social and environmental changes in Australia due to long term technological change."

The seven commissioners are:

Phillip Adams – advertising executive, film producer and chairman of the Australian Film Commission.
Prof. Leonie Sandercock – Professor of Urban Studies at Macquarie University.
Jan Owen – president of the Youth Affairs Council of Australia.
Robyn Williams – Executive producer of the ABC Radio's Science Show.
Dr Martha Cleary – project manager of Planning and Development at ICI.
Prof. Shirley Smith – Assoc. Professor of Education at the University of NSW.
Prof. Peter Mason – Professor of Physics at Macquarie University.

It all sounds a little academic to me.

Plotting a straight course . . .

The little Aussie Bees go to Sweden and the Swedish plotters come to Oz. Due at end of April are the FACIT 4550 & 4451. These plotters come with either RS232 or Centronics interface and are capable of creating good quality multicolor graphics on paper or overhead transparencies. The costs are $1330 for the 4450 and $1765 for the 4451.

Sunny times ahead

How does the thought of accessing 368 Meg appeal to you? And what about APPLETALK implemented? In fact to link an IBM to a Mac – or a II system, could cost less than $6000 for 10M. The company involved in these feats is Austor Micro Systems with their SunDisk. More on this next month.

Woz gone

There's always more than a little sadness even though he's gone before and always come back – because for a good many people, Apple is not personified by the well groomed, shiny shoed business manager, but rather by the teller of bad Polish jokes. We can only hope the electronics business won't be too profitable. ☐

Sad news

There is one very sad piece of news on the local front. Harry Harper of Zofarry Enterprises and the man who is Vision 80, was involved in a car accident early this month and is still in intensive care. We at the Australian Apple Review would like him to know that we are thinking of him and wish him the speediest and completest of recoveries possible. ☐

Starring Wordstar

Wordstar is one of those programs that you either love or hate – and when you love it, you love to hate it. The main reason there's so much emotion and usually adverse feeling generated towards WS is unfortunately the same as the reason why there are similar feelings about dBase II, and the same as the reason why every man and his dog have written about them in magazines, books and on the backs of doors – they CAN be complex and the manuals completely reinforce this fact – if you ever have the patience to read them. This is why as a wordprocessor, Zardax is so popular. Certainly cost is a factor, but Zardax makes the trade-off; less power for far greater ease of use.

Booting the Star

If you have a copy of WS and are going to use these pages as a tutorial, make sure you have the following files on disk:

```
A>DIR

A:WS     COM :WSMSGS  OVR :WSOVLY1 OVR :
A>
```

These are the only files required to run WS. If you have a file WSU.COM on your disk and no WS.COM, then you probably have an uninstalled Wordstar. Don't worry – it should still work.

Briefly returning to last month's column; the only files you can directly run from the CP/M A>_ prompt, are the ones with the .COM extension. The .OVR files are overlay files which are read into memory only when needed. WS is too large to be loaded totally into memory and still leave you room for text!

```
A>WS<RET>
```

At this point there are several choices that can be made. The ones we are most interested in are 'N' and 'D'. These are the text entry options, and the choice you are given is between FORMATTED entry (D) and UNFORMATTED entry (N). If you are writing a letter or a column for a magazine etc, you would select the 'D' option. Wordstar will display on the screen the text you type EXACTLY as it will appear in your printout (except for proportional spacing).

If you select N, WS creates a totally unformatted file. This allows you not only to process text but also to write BASIC, FORTRAN, C, assembler etc programs using WS's superior editing facilities. No print information or other control characters are hidden in your file and using WS you can search your code, globally replace, add, modify and in general treat your programs as just another block of text. When you name these files remember to add the suitable extensions – .BAS for BASIC, .FOR for FORTRAN etc.

If you have MBASIC (it comes standard with the original, but not with the SE Asian version of the Z80 board) try this:

a. Enter WS.
b. Select N
c. For name of file enter TEST.BAS
e. Type the following:

```
10 A$=" hello "
20 B$=" Fred "
30 C$=" goodbye "
40  PRINT A$ B$
50  PRINT C$
60  PRINT B$
```

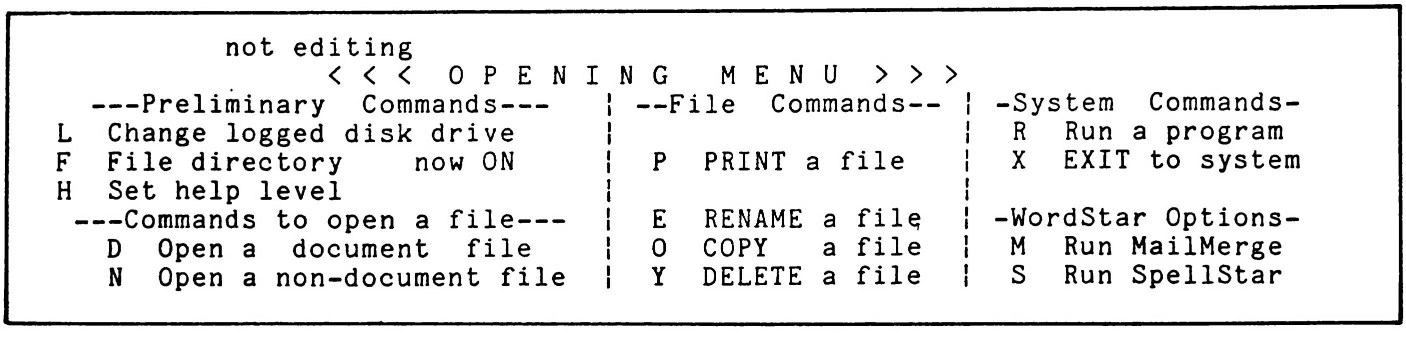
f. Save this with ^KD
g. Exit WS with X

Now, either copy that TEST.BAS onto your MBASIC disk or if you have two drives, put your MBASIC disk in A: and your file in B:

A>MBASIC TEST <RET> for one drive and
A>MBASIC B:TEST <RET> for two drives

When the program ends, type LIST <RET> and you will see the program listed in BASIC. So big deal! It would have been easier to have typed the program in BASIC from the start. OK, imagine that the program is three or four pages long and you want to know where exactly you have used B$. Further, you have decided to change B$ to FRED$, or the word 'Fred' to 'ladies and gentlemen'. And, you want to use this routine in a couple of other programs that you're writing.

Back to WS. ^QF will find whatever you are looking for. ^QA will find and replace (automatically if you like) and ^KB and ^KK will define a BLOCK which can be read into any file you name. Give it a try. All of a sudden some hidden virtues of wordprocessors become evident. However, I seem to be digressing . . .



```
          not editing
                 < < <  O P E N I N G   M E N U  > > >
   ---Preliminary  Commands---    | --File  Commands-- | -System  Commands-
 L  Change logged disk drive      |                    |  R   Run a program
 F  File directory    now ON      |  P  PRINT a file   |  X   EXIT to system
 H  Set help level                |                    |
  ---Commands to open a file---   |  E  RENAME a file  | -WordStar Options-
    D  Open a  document  file     |  O  COPY    a file |  M   Run MailMerge
    N  Open a non-document file   |  Y  DELETE  a file |  S   Run SpellStar
```

FLASHPRINT!! allows you to design bit-image characters for your printer such as our car and our boat and print them easily using only two characters in a Wordstar file. You might like to include scientific symbols in your version of FLASHPRINT!!

back to WS and writing formatted text.

Ruling with WS

The criteria by which your text is formatted is determined by the "ruler line" and ^OW (right justified or not). WS defaults to a text width of 65 characters with right justification ON, but there are times when something a little different may be required. For example, you may be preparing reports or writing a thesis which contains tables. Here a different ruler line would be handy – just for the tables, and return to the original line thereafter. The usual means of changing margins is by using ^OL for the left margin and ^OR for the right. If there are a lot of tables, then the procedure becomes quite tedious.

A solution is to store a number of ruler lines in files and then read the required file into the text at the appropriate time. For example, you can create a file called TABLE1 with an alternate ruler using the D option and keep your normal ruler in a file named NORM1. Each of these files will only have the ruler line and possibly some print specific code. **See Figure 1**.

The second ruler line is a copy of the default. **See Figure 2**. The first will give the sort of formatting I find useful when dealing with tables of text and dollars. The .CW10 is a print code which causes printers which support such codes to print slightly more compressed – 12 characters per inch as opposed to the default 10. No, I didn't mix up my numbers; CW stands for Character Width and the narrower the character, the more of them you can fit into an inch. This will mean that your table will be highlighted. The # is the decimal tab stop. Tabbing to this point will cause WS to display the word 'decimal' above the ruler line. When the number is typed, it will enter to the RIGHT until the decimal point is encountered. **(Figure 3)**.

The disadvantage of this method is that a few steps are required in reading in the file (^KR), setting the ruler line (^OF) and removing anything which is not to print (^Y).

Another means of achieving a similar result, particularly when only two types of lines are required, is to create a dual purpose ruler right from the start. This is particularly useful if supplying text beside diagrams. **See Figure 4.**

This line is 65 characters wide (a to e), with the first tab stop (b) being the usual paragraph indent. Position 'c' is where the diagram description should start, with 'd' being its indent. When typing text, no changes need to be done. However, to type only between positions 'c' and 'e', do ^OG ^OG first. This evokes the temporary paragraph settings and so is cancelled by a <RET>.

This text shows how the new ruler functions. Right justification is still ON but can be turned OFF with ^OJ.

The <RET> at the end of the line returns us to the full 'a' to 'e' ruler.

SUMMARY OF EDITING COMMANDS

^A	move cursor left one word
^B	reform paragraph
^C	scroll up one screenful
^D	move cursor one character right
^E	move cursor up one line
^F	move cursor right one word
^G	delete character under cursor
^H	delete character to left of cursor
^I	tab
^J	display HELP menu
^K	display BLOCK menu
^L	repeat last find or replace
^M	same as RETURN
^N	insert "hard" carriage return
^O	display ON-SCREEN menu
^P	display PRINT menu
^Q	display QUICK menu
^R	scroll down one screenful
^S	move cursor one character left
^T	delete word to right of cursor
^U	interrupt
^V	turn insert ON/OFF
^W	scroll down one line
^X	move cursor down one line
^Y	delete whole line
^Z	scroll up one line

^JB	explain reforming of paragraphs
^JD	list print directives
^JF	explain "Flags" at right of screen
^JH	change the Help level
^JI	command index
^JM	explain Margins and tabs
^JP	explain use of Place markers
^JR	explain the Ruler line
^JS	explain the Status line on screen
^JV	explain moVing text

^K0 - ^K9	set/hide place markers 0-9
^KB	mark/hide beginning of Block
^KC	Copy a block of text
^KD	editing Done - save file
^KE	rEname a file
^KF	turn File directory ON/OFF
^KH	Hide/display the marked block
^KJ	delete a file
^KK	mark/hide end of a blocK
^KL	change the Logged-in disk drive
^KN	ordinary block/column block toggle
^KO	cOpy a file
^KP	Print a file
^KQ	Quit edited version of file
^KR	Read a file & insert in document
^KS	Save and re-edit the present file
^KV	moVe a block of text
^KW	Write a marked block to a file
^KX	save file and eXit to CP/M
^KY	delete the marked block

^OC	Centre the text on cursor line
^OD	turn Display of control characters on screen OFF/ON
^OE	turn "soft" hyphen entry OFF/ON
^OF	set margins & tabs from line
^OG	indent paraGraph (paragraph tab)
^OH	turn Hyphen help OFF/ON
^OI	set a tab
^OJ	turn Justification OFF/ON
^OL	set Left margin
^ON	remove a tab stop
^OP	turn display of Page breaks OFF/ON
^OR	set Right margin
^OS	set line spacing
^OT	turn ruler display OFF/ON
^OV	turn variable tabs OFF/ON
^OW	turn word Wrap OFF/ON
^OX	margin release

^P **RETURN**	overprint the last line
^PA	Alternate pitch (on some printers)
^PB	produces **Bold type**
^PC	makes the printer pause
^PD	produces **Double strike**
^PF	phantom space
^PG	phantom rubout
^PH	overprint the last character
^PM	overprint the last line
^PN	Normal pitch (on some printers)
^PO	enter a non-break space
^PS	produces underScored text
^PT	produces superscripts
^PV	produces subscripts
^PX	produces ~~strikeout~~
^PY	some printers change ribbon colour

^Q0 - ^Q9	move cursor to marker 0-9
^QA	find a string & replace by another
^QB	move cursor to beginning of Block
^QC	move cursor to the end of the file
^QD	move cursor to right end of line
^QE	move cursor to the top of screen
^QF	Find a specified string
^QK	move cursor to end of blocK
^QP	move cursor to Previous position before the last command
^QQ	repeat the next command
^QR	move cursor to beginning of file
^QS	move cursor to left Side of screen
^QV	move cursor to its position before the last command
^QW	scroll down continuously
^QX	move cursor to bottom of screen
^QY	delete from cursor to end of line
^QZ	scroll up continuously

Just incidentally, all that has been said about WS holds true irrespective of the machine you are working on. I wrote this article on my Apple, but could have used my IBM just as easily.

I would like to finish up this month by mentioning two programs that have crossed my table since the last issue.

Figure 1:

```
A>TYPE TABLE1
  .CW10
             L——————————————.—#-R
```

FLASHPRINT

Flashprint	**- dot matrix printer - WS utility**
Requirements	**- 64K Apple with Z80, Wordstar**
Produced by	**- JRT Software**
Cost	**- $59.00**
Available	**- Thinking Systems, (02) 211-0944**

Although I will do a little ribbing, I do like Flashprint. Basically, the program gives the ordinary Wordstar driving a dot matrix printer a mass of reasonably easily accessed options and even the ability to include graphics in text. How this is achieved is by loading a short file which intercepts certain codes sent by WS to the printer. The program does not alter WS and does not need to be used each time you write – good features! However when used, some pretty fancy effects can be achieved.

1. Graphics can be printed at the same time as text – good-bye glue stick?
2. ESC codes can be sent to the printer – you can switch to alternate fonts (as condensed italic or expanded German) mid word if you wish.
3. CHR$'s not supported by the keyboard can be generated by the printer.

That's the good news. Now the bad. When it comes to graphics, there is some work to do, and the manual . . . remember that ribbing I mentioned, well, have a look at the cars and boats. Seriously though, the manual could do with some help.

To sum up, it's a local product, locally (SA) supported and is an excellent enhancement to Wordstar.

Figure 2:

```
A>TYPE NORM
L——!——!——!——!——!——!——!——!——!——!——!——!——!——!——!———R

A>
```

Figure 3:

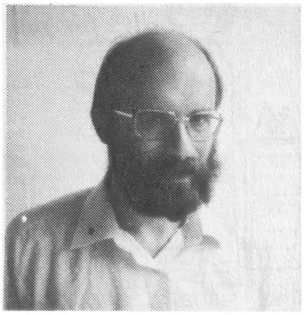
```
      L——————————————————————————#-R
      MATERIALS
      timber                  2455.00
      sand                     567.78
      bricks                  8665.75
                              ———————
                  TOTAL      11688.53
```

Figure 4:

```
L—— !——————————————————— !—— !——————————————————— R
a.  b.                   c.  d.                   e.
```

At the terminal

by Paul Zabrs



Basics of computer communications

To most Apple users, Paul Zabrs requires no introduction. Paul has been involved with Apples and Apple groups for many years and is the author of undoubtedly the most popular piece of Australian communications software – Terminapple. The popularity of Terminapple is well justified. Firstly, it is a highly tested, well thought out and easy to use product. Secondly, and perhaps most importantly, it is supported by the man himself – Paul jokes of late night phone calls and puts it all down to a day's work! I wrote these sentences not so much to plug Terminapple, as to give a little insight into Paul. Thorough, highly intelligent and always ready to solve a problem, I think that we are fortunate to have him writing for the Australian Apple Review.

Paul's field of expertise is now beginning to bloom with more and more people plugging their Apples into remote databases, bulletin boards or simply talking to one another. For those of you yet to experience that fantastic feeling of having the world at your fingertips, Paul's column may just tempt you. For those who are already connected, the column will be an excellent source of advice, hints and general information on how to communicate better.

"What will you do with it?" That was the question I was frequently asked when I bought my first Apple][in late 1977. To me such a question always seemed irrelevant, if only because the joy of having such a powerful machine at my disposal was enough to answer it. At that time there was virtually no software available, but those of us who had paid, in today's terms, large sums of money didn't mind that at all.

And I think I am not alone in claiming that the Apple][was, and still is an excellent choice due mainly to the absolute excellence of its design. There were many things we could do, such as our own experimentation, programming etc.

With the increased proliferation of both hardware and software many people have over the years entered into the computer age. Thus almost all microcomputer users are familiar with not only games, but also word processing, spreadsheet modelling, data bases and in many cases programming.

Of all the broad uses for such machines, one stands out more than most when it comes to ignorance and lack of awareness – computer communications. In this column I am going to concentrate on this area.

Many people know from hearsay or the popular press that home computers can be used to communicate with other computers. But that's as far as it goes. Misconceptions also abound; for example, I have been asked a number of times if it is true that an Apple][can only "talk" to another Apple. To clear any doubts now, your Apple][can "talk" to almost any computer, from the smallest to the largest, but more about that later. By the way, for the purpose of this article Apple][also means Apple //e and //c, unless otherwise specified.

Benefits of communicating

Before we get into a more detailed discussion we should ask the question "why computer communications at all?". One glib answer could be – because it is possible, but there are many other reasons. Probably the best answer is that it provides a fast easy access to up-to-date information and knowledge. And, as everybody knows, knowledge is power.

Secondly, you can exchange information, e.g. you can consign letters, articles and even send and receive programs. And, of course, computer communications lets you use a mainframe computer physically located anywhere in the world from your living room.

But as with most good things, there are overheads. First and foremost you must have a computer. Next you need a communications card, a modem or an acoustic coupler, communications software, a telephone and someone to communicate with. This someone can be an impersonal large computer installation or a friend with a computer.

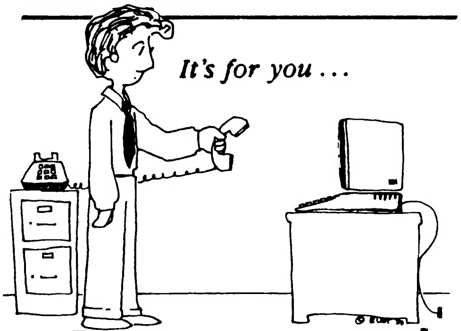
The communications card

Looking at each piece of equipment individually, I'll start with the communications card. This interface board allows the computer to output characters, one after another, to the modem. The process is the same as when characters are output to a printer through a serial interface. In fact, an identical card can be used for either purpose. On a //c there are two serial ports already built in, one for printing, the other for communications. The two ports are essentially identical.

Each character, e.g. a letter, digit etc., leaves the computer via the communications card as a series of electrical pulses. These pulses reach the modem by means of a short cable. I shall digress here to state that this innocent cable is by far the most frequent cause of problems people encounter when first trying to communicate. Fortunately, an incorrectly configured cable will not blow up your equipment; things just won't work properly or at all. I will discuss this problem at greater length in a subsequent article.

The modem

The modem, an acronym for modulator-demodulator, converts electrical pulses leaving the computer into sound. Why sound? Because that's what telephones are good at sending, and the ordinary telephone



line usually serves as the link between two computers any distance from one another. When using an acoustic coupler you can clearly hear the various tones corresponding to what is being transmitted. In normal operation the telephone receiver is placed into the coupler so that sound can not only be sent through the microphone, but also be received through the earpiece.

Many modems nowadays come provided with their own telephone and plug directly into the phone line, making your old telephone redundant. Such modems have a switch so that you can use the provided telephone normally or alternatively you use the modem. Some modems even allow you to dial from your computer keyboard.

Two modems are needed for computer communications, one on either end. The situation is basically the same irrespective of what your computer is "talking" to, a friend's computer, a bulletin board or a mainframe. On the receiving end a modem converts the sound into the same electrical pulses which originally gave rise to the sound on the sender's side. The modem can process both incoming and outgoing characters. Naturally so can the communications card.

When the communications card drives a printer, the information goes only in one direction i.e. from computer to printer. With communications, information can move both ways. The remarkable thing is that it can happen simultaneously. This is known as FULL DUPLEX communications. How can that be? The answer stems from the simultaneous use of frequencies of sound which do not mix well and therefore are able to stay distinctly separate. However, as with all facets of computer use, the ability to turn your Apple into a terminal, and the amount of sophistication you attain with your system, depends heavily on the software you are using. I will be looking at the options that make a good communications program in my next column. ☐

ADVENTURER'S

by Adam Rigby

This month I am going to visit the world of ZORK with you. Included is a review for those who haven't played it, a partial map to get beginners off the ground and many tips and clues for those who are stuck on it. Next month lots of information on other adventure games on the market.

I must thank all those people who wrote to me in their desperation. This month I shall begin answering the multitude of questions sent in. (If your letter is not answered here, it will be in the mail.) The answer won't be easy to read – the whole sentence is reversed so that to read it you must start at the end – example:

rood neerg eht nepo

This reads as "open the green door".

ZORK I
The Great Underground Empire

This adventure is probably the world's most popular, well, at my house anyway. It is a text adventure with pages and pages of description, so it is not a game to be taken lightly – you need a total concentrated effort to play it effectively. I must stress one thing, it is not a beginners' adventure. At least be fairly familiar with adventure games before you start trying to conquer this one.

Booting the program is very easy and only takes about two minutes, although it is disk based so it is a great pity for all broke 64 owners (keep saving those pennies – it's worth the money for the drive just to play the Zork series).

The idea of the game is to collect 20 treasures and, more difficult, to survive the formidable world of Zork.

One of the things that puts Zork in a class of its own is the size of the vocabulary – it is immense. The following is an example of possible sentences in Zork:

TAKE ALL BUT THE BOOK AND THE DAGGER.

THROW THE NEWSPAPER, THE RED BOOK, AND THE MAGAZINE IN THE CHASM.

Another interesting feature is the ability to answer questions that you throw at it such as:

WHERE IS THE GOLD?

WHAT IS A GRUE?

Zork has the ability to assume things (well, more or less). If you are in a room with just a sword and you type "get" then Zork automatically assumes you mean the sword – pretty neat. Another way that Zork assumes things is when you try and do something with an object near you but you do not have it, such as:

```
COMPUTER WRITES: You see a
leaflet.
YOU INPUT: read
COMPUTER WRITES: (leaflet)
                 (taken)
  "welcome to ZORK...
```

In the above example it has assumed two things, first that you mean the leaflet and the second that you take it. As you can see this feature saves a lot of unnecessary typing.

The SAVing game routine is good, as you can save the game in eight different places at once (per disk). I have included a section of the Zork world map to aid people who have just begun their journey into the unknown.

Zork fast becomes an obsession to many people, including myself. It is definitely a must for the adventurer's software library.

Letters

The majority of my letters are from people stuck in the Zork series, which could indicate its difficulty and popularity.

Dear Mr Rigby,

I am writing to you to see if you can help us with our journey through ZORK I.

1. When you get the skeleton key how do you open the grate?
2. How do you get the diamond that is in the mine?
3. How do you get west of the Timber Room with some light?
4. Where is the cyclops and how do

CORNER

you get to it?

5. Does the chirping of the songbird mean anything of importance?

I hope you can answer these questions for us as we have been playing ZORK for 12 months now, and for about the last three have been stuck in the Timber Room, and we are beginning to get a bit hungry.

L Monaghan

Adam: (read clues backward)

1. edis rehto eht morf etarg eht nepo tsum uoy

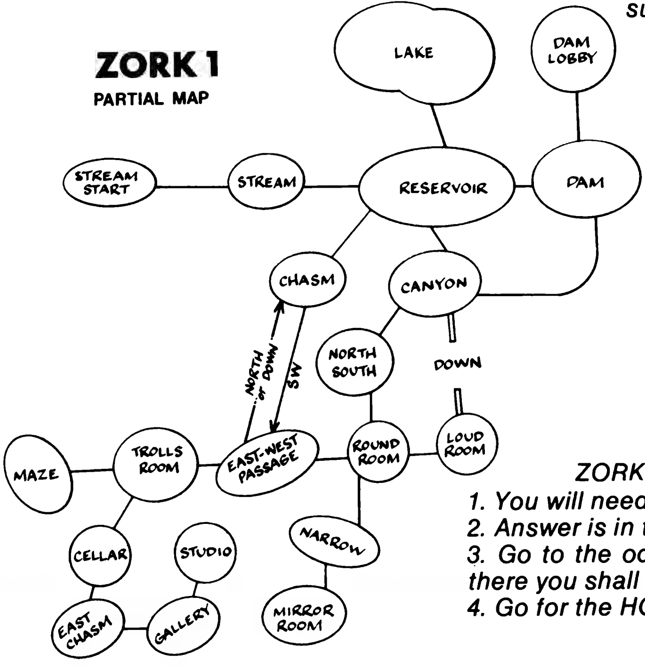
2. I'll never know how you found out about it if you haven't seen it – anyway here's the clue: moor rebmit fo tsew

3. moor rebmit eht fo tsew moor eht evoba yltcerid si moor teksab eht

You may need more help than this so read on if you are still stuck: moor sag eht rof tuo hctaw tub, moor rebmit eht ot uoy teg ot eno dna teksab eht ni tep ot eno thgil fo secruos owt deen ouy

4. I dont want to give this one away so I shall give you just a small clue: dnuora klaw dna noteleks morf WS og, ezam eht ni

5. This one kept me going all the way through ZORK 1: gge eht enimaxe, sey



ZORK 1
PARTIAL MAP

Dear Mr Rigby,

Can you please help me in the following problems?

ZORK I:

1. How do I get over the rainbow?

2. How do I get into Hades?

3. How do I get back to the house from underground?

ZORK II:

1. What's the explosive (brick & string) for?

2. How do I get past the lizard?

3. How do I get in to inflate the balloon?

4. What do I do in the oddly angled room?

I hope you can help me with these problems as I am rapidly losing my sanity.

C. Anderson

Adam:

ZORK I:

1. wobniar eht yfidilos ot desu si serusaert eht fo eno

2. The items that you will need are the following: matches, candles, black book, bell – if you need more help read next month's issue (you should have worked it out by then).

3. There are many ways to get back up, the easiest being to find a suitable place and pray.

ZORK II:

1. You will need them in the volcano.

2. Answer is in the well.

3. Go to the oddly angled room and there you shall see the answer.

4. Go for the HOMER!!!

Dear Sir,

Help me with the following problems for I am STUCK!

ZORK I:

1. Is there anything else apart from the skeleton in the maze?

2. The inflatable boat's use seems quite limited to just downstream of the dam, where else can I use it?

3. I can kill the thief (strangely only in the coal mine). Is it worth while?

ZORK II:

1. Is it possible to follow the princess any further than the Gazebo?

2. I am stumped at the Riddle Room not so much by the riddle as by how to answer. Help is needed.

3. Is the Gazebo an entrance to another room?

4. Is the menhir blocking the southwest passage capable of being moved?

ZORK III:

1. Is it possible to get off the aqueduct without being killed?

2. Cloaked person. He is killable and I can keep his hood and cloak and let him live or not. Suggestions?

W. Falconer.

Adam:

ZORK I:

1. Other puzzles are to be found SW from the skeleton. Wander around until your sword glows; then SE.

2. Believe it or not, the boat is one of the most useful items in the adventure even without going within 10 feet of water: meht laets ton lliw feiht eht – taob eht ni sgniht yrrac

3. The thief does have a use to you, so try not to kill him until he has completed this: uoy rof gge eht pu snepo eh

ZORK II:

1. reh htiw obezag eht ta tiaw dna slraep eht reh evig tsuj, on

2. Answer by typing 'ANSWER "....."'.

3. No.

4. Yes: dnaw eht esu

ZORK III:

1. Remember that the earthquake causes many changes to the game.

2. A word of help for Zork III: elpoep ot ecin eb ☐

Using the Mac for mailing

It is difficult for me to work out whether ours is a normal office or not. Obviously not if you judge by the inhabitants, who all are a few sandwiches short of a picnic and have kangaroos loose in the top paddock. But possibly so if you are talking about our work patterns.

We are, for example, inveterate mailers, and use the Apple IIe with the mailing list tied in to Zardax. Not even Ian Phillips' greatest fan would say the mailing facility on Zardax was perfect. Unkind critics might go even further.

Since we have started using a Macintosh we have been waiting for a mail merge program so that, all things being equal, we could start building up a proper mailing system.

New from Megahaus

The first to come our way is "MegaMerge" from Megahaus. This is an interesting company which has produced a quite stunning add-on program for "AppleWorks" called "Megaworks" which we favourably reviewed in our last issue.

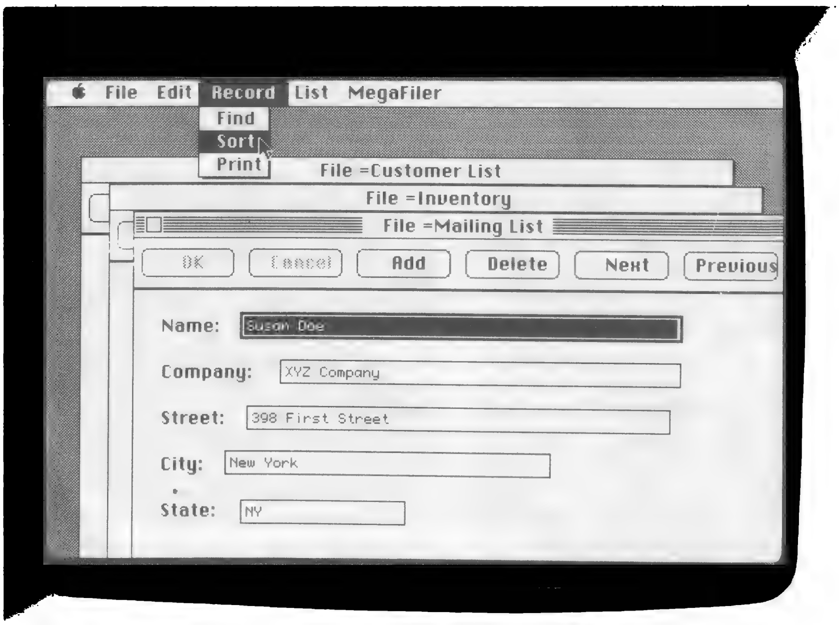
MegaMerge is a standard mail merger which works with on the one hand a document and on the other a list of names and addresses. Basic stuff which is common and essential to all mail merge programs.

Where the differences in these programs become apparent is where they allow you to play around with the basic concept and add little grace nots.

The first essential is to create a form letter which covers all contingencies. Where you would normally put the name and address you type in "Salutation, Address, City, State Area Code." Where you would type "Dear Mr Humperdinck" you type "Dear Salutation".

Mergefont

All fairly standard stuff. Important to realise that the variable parts of the letter, "Salutation" and so on, are in a plain type face, which we will call mergefont after the example in the book, different from the rest of the letter.



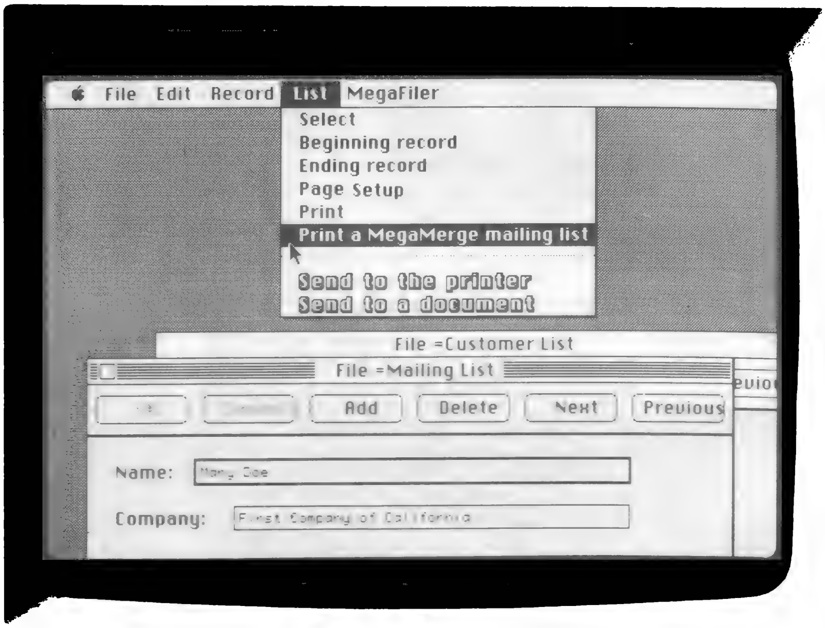
Name: Susan Doe

Company: XYZ Company

Street: 398 First Street

City: New York

State: NY



Name: Mary Doe

Company: First Company of California

The mailing list itself is set up with the same titles in the mergefont but with the actual data in precisely the same type face as the body of the letter.

Printing out the letters is simply a question of pulling down the appropriate screen, selecting what you want and then going off and having a cup of tea while the Macintosh and its printer remorselessly churn out the copies.

When you have finished the letters, MegaMerge will then do the same with the labels. All good simple stuff with no inherent problems.

Bells and whistles

There are lots of extras. If you do not have a fat Mac, this program will merge together several documents into one long one, thus overcoming the problems of limited memory.

You can also insert any paragraph or block of text or any picture from one piece of copy into another. This is called, for reasons which are not readily apparent, boiler plating.

You indicate the paragraph or picture that is to be merged with a key word which has been typed in using the mergefont.

The same keyword appears in the document you are printing out and merging is automatic.

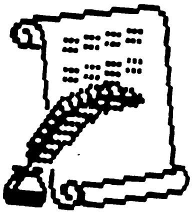
All this is sound, solid but fairly elementary stuff.

Where it becomes interesting is when you use another program from Megahaus called "MegaFiler" to create your mailing list.

This is a solid basic filing program that allows you to keep a mailing list (and any other list for that matter) in a set form designed by yourself. Once the information is entered then you can sort alphabetically by name or numerically by area code.

Even better, you can easily define which criteria you want to apply in selecting a mailing list to use with "MegaMerge". Typically you could say that you only wanted to write to people in a given area, or to customers who had made a purchase in the past few months, or to clients who had not written in the past year.

If the information is in the list then it can be sorted and selected with relative ease. It is here that the strength and power of the Macintosh show through, because it is almost as quick to use a filing system like MegaFiler as it is to use a true relational database. And it is a great deal simpler.



Second opinion

I am sure that the non-hirsute ex-Thespian has taken steps to remedy what appears to be a major bug in this program. Indeed, I know that a modified version is, even as I write, winging its way to Australia. Those of you who have the original version should know that under certain circumstances the program can flap majestically up its own orifice leaving you naught but troubled woe.

I only found this bug after using the program for a while and my discovery coincided with cries of woe coming from "Software Source" who had also discovered the flaw simultaneously.

What happens is this. You design your form and start to make entries. And, of course, in designing your form you will have left out some vital section that you quickly find you need to include. There is a special routine for this called "Redesign" where you take the original form, make your modifications, and then transfer all the information from its original form layout to the new one. Some time later you may find yet more information categories that you have omitted and so you go through the same procedure.

Then when you go to print out, the machine hangs. The reason is a peculiar one. The corrections or additions you make push copy out of sight off the screen but still, apparently, on the bit map.

When you go to print out, the computer is flummoxed as to which piece of information it should access, and calls a quick stop work meeting.

Even if you then sit down and find every spot, jot and tittle of information on the bit map and expunge it, the computer still remains in a permanent sulk. And the information you have inputted is up the stuff.

The only way around this problem at the moment (no doubt the new version has the problem licked) is NOT to amend any form once you have designed it. If you feel you need to add another category then totally redesign the screen from scratch. DO NOT MODIFY THE SCREEN YOU STARTED WITH. Or there will be trouble.

As I understand it Software Source are contacting every customer of this program and warning them of the bug. And no doubt it is going to cost the non-hirsute ex-Thespian a pretty penny to sort it all out.

As I said in the review, I like the program, which seems to me simple to use. But I wonder how on earth the American company could let such a major bug get past. There has been no suggestion that this was a beta, testing, version.

The fact that it cost me time, money and anguish is beside the point. Greg Lister has always supported this magazine, is an amiable and honest cove and we will continue to support him.

But I have met Ecuadorian pimps with better morals than a software producer who lets out such a package internationally without testing it thoroughly first. □

Have you seen the other Gareth Powell Computer Magazine

The Australian Commodore Review

Available from newsagents and computer stores, or by direct subscription ($18 for six issues, $36 for 12 issues from

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Randwick, NSW 2031

Was Rembrandt really an Australian?

It's easy to see why one American reviewer got our all-Australian software confused with a European masterpiece. Our programs have been praised in England and pirated in Taiwan. In Australia, they've been used and used and used. We want to make more all-Australian programs that are solidly useful.

The success we've had is enabling us to do just that. We have been forming a team of talented programmers whose sole aim is quality. We're preparing a series of masterpieces. None of them will be paintings, all of them will be the finest programs for the finest computers. They will all bear the name Zardax, as your guarantee of quality.

What's all this got to do with Rembrandt? Read on.

— *"this word processor is a piece of cake to use." Infoworld 22/2/82*
— *"superbly easy to use, quick, convenient." PCAL Report Dec 83*
— *"in many ways better than a dedicated word processor." The Australian 31/3/84*
— *"if word processing is an art, Zardax is a Rembrandt." In-Cider March 83*
— *"highly recommended." Softalk Jan 84*
— *"Zardax wins praise for being well-nigh bulletproof." Your Computer April 84*

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Publishers of Zardax software

Visicalc function keys

by Ralph Morgan

The use of the "function" keys is not dealt with in any depth in the various manuals and one of these, the lookup function (@LOOKUP) is a very handy tool.

The Appleworks manual describes @LOOKUP as follows:-

@LOOKUP sets up two tables, the first either a row or a column you specify, and the second the column to the right or the row below the first. It then takes a value you supply, the search value, and searches sequentially for the largest value in the first table that is equal to or less than the search value. When it finds the correct value, it returns the value **in the adjacent cell in the second table.**

For the purpose of this example we will assume that you have a number of customers who are charged monthly according to the number of days in the month for a varying range of products.

First set up the model shown below:-

1.	A	B	C	D	E
2.					
3.					
4.	Product charges for the month of December				
5.			Month No. 12		
6.					
7.		Product	Cost	No. of	
8.	Customer's Name	Code	per day	Items	Charge
9.					
10.	Johnson K B	23		3	
11.	Smith G F	22		5	
12.	Hodges M	30		2	
13.	Dennis D	24		1	
14.	Jones S A	25		4	
15.	Brown H D	27		6	
16.					
17.	Items Charged				
18.	Amount due				

Next set up the Lookup tables as shown. The object of these is to first allocate the number of days in the month and secondly to allocate the cost per product. The second table has two objectives, to ensure the correct charges per product and to enable changes to be made to the rate of charge of an item,without the need to search the list for the item number.

→

Lookup tables

	B	C	D	E
19.				
20.	———			
21.	Month	No. Days	Product	Cost
22.	1	31	22	24.95
23.	2	28	23	13.75
24.	3	31	24	21.65
25.	4	30	25	20.75
26.	5	31	26	29.35
27.	6	30	27	31.55
28.	7	31	28	21.95
29.	8	31	29	20.15
30.	9	30	30	22.85
31.	10	31		
32.	11	30		
33.	12	31		

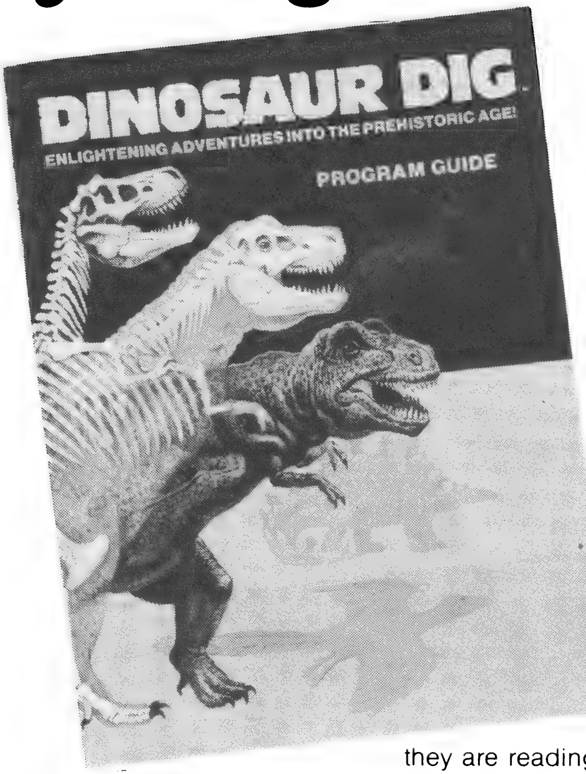
Finally, enter the necessary formulae. In cell C10 @LOOKUP (B10,D22. . .D30). This says look at the first value, the product code, find this code in column D and enter the value shown opposite it in column E in C10. In cell E10 @LOOKUP(E5, B22. . .B33)*C10*D10. This says look at the number of the month and find the number of days in the month then multiply the number of days by the product value and by the number of items. In cell D17 @SUM(D10. . .D16) and in cell E18 @SUM(E10. . .E16). These two formulae total the number of items and the value of all items. Note:- the last value in each of these two formulae relate to the dotted line. This is done so that the formulae do not require altering if additional customers are added above the line. Copy the formula in cell C10 down to cell C15 making sure that the first value is always "relevant" and the other two are "no change". Do the same with cell E10, this time the first three values are "no change" and the last two are "relevant".

The completed example should then look like this:-

Product Charges for the month of December
Month No 12

Customer's Name	Product Code	cost per day	No. of Items	Charge
Johnson K B	23	13.75	3	1278.75
Smith G F	22	24.95	5	3867.25
Hodges M	30	22.85	2	1416.70
Dennis D	24	21.65	1	671.15
Jones S A	25	20.75	4	2573.00
Brown H D	27	31.55	6	5868.30
Items Charged			21	
Amount due				15675.15

Do you dig dinosaurs?



Dinosaur Dig:	**Education/ Entertainment** **2 disks, manual and keyboard overlays**
Requirements:	**DOS 3.3, will work on IIc**
Cost:	**$39.95**
Available:	**Beagle CS**

When you were a kid, did you have a fascination for dinosaurs? I sure did, my kids do and a head count around the office showed that even slightly off-beat characters are captivated by these extinct creatures. If you have immediately identified yourself as a kindred spirit then don't read another word of this review – get the program as quick as you can (you can say you're getting it for the kids!). After looking at my copy for only a short period of time, I'm sure they've made a mistake with the price. Then again, it could be that it's distributed through CBS (the record people) and not that other mob.

I'll assume that the only readers I now have are those who aren't totally into dinosaurs and the only reason they are reading on is because they have spent good dollars on the magazine. For you I will try to be tempting.

Dinosaur Dig is a very well presented educational game package. The physical components include two disks, a manual and two keyboard overlays.

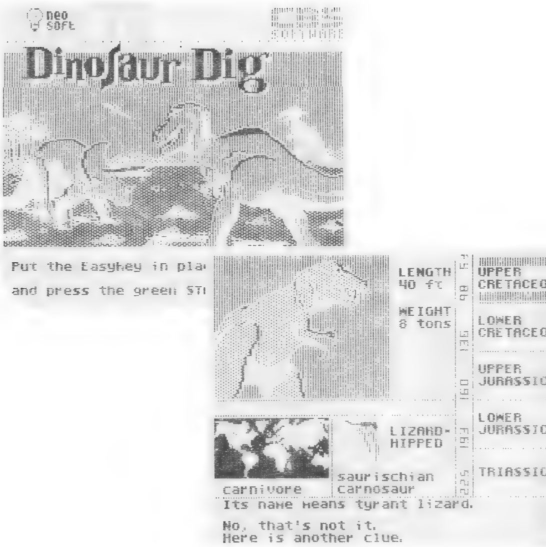
Disk 1 is an "electronic book". The idea is that what you read is complemented with colour graphics – which in many cases move before your eyes. This makes points made in text particularly clear and leaves little room for misunderstanding. It also makes interesting reading.

Disk 2 is the games disk. There are five games on this disk:

1. Dino Discovery is a database of 32 dinosaurs with about 10 facts on each and a graphic.

2. Dino Dig allows you to identify dinosaurs by being given one clue at a time. You have nine chances, and let me tell you I thought I was quite hot until I tried this. The game is scored and the manual gives suggestions as to ways of play.

3. Dino Flash is by far the hardest and most interesting of the games. A graphic is flashed on the screen and you have to identify. This is really fast if you're playing against a couple of other people.



```
Put the Easykey in pla
and press the green ST
```

```
Its name means tyrant lizard.

No, that's not it.
Here is another clue.
```

4. Dino Encounters: Fact or Fable is YES/NO and perhaps the least inspiring game. Here the slant is to teach the time periods in which dinos lived. More competition or more complex entry would have picked this up.

5. Who's Biggest is quite a mental test, and again, I thought I was pretty hot! Each choice is between three different animals, and it can be deceptive.

Up to now I haven't mentioned the most colourful aspect of the package – the overlay. Initially I thought it was a gimmick, but after playing the games I revised that opinion. The overlays fit over standard Apple II+ and IIe keyboards, and allow you to select options at a single keystroke. You could tell me that it is just as easy to find Y/N on the keyboard or select 1-5 from a menu. To that I'll tell you that if you're playing Dino Flash and have to key in "Struthiomimus" while the person next to you is struggling with "Quetzalcoatlus" and the person behind you decides to try "Psittacosaurus" you will see that an overlay with all these names accessible with a single keystroke is a necessity and not just a nice touch.

To sum up, I think it's GREAT. Further, it's very good value for money. The package is very reasonably priced, particularly as it is so heavily copy protected – no, the disks are easy, so backups will be no problem – but that coloured plastic overlay hates going under the photocopier and without it, Dino Dig is not the same. Rush this one!

C for the Apple

The handsome face belongs to Andy Hughes who has volunteered to contribute some of the technical reviews on a regular basis. Andy is a member of the international testing team at Honeywell and although his bread and butter is in the mainframes he shares his home with several micros, and even at work there's an Apple!

In fact Andy has been involved with computers since before he was allowed to wear long trousers, and for him, the definition of a great evening is a computer, a disk and a two-kilo manual.

Such a passion for the machines has meant that not only is Andy highly respected in his field, but also that he is perhaps one of the most apt and experienced people at using and reviewing software of a complex or technical nature around. He starts off with the Aztec C compiler.

Background to C

Although C is a relatively new language on the micro front, it was in fact developed at Bell labs back in 1972 as a UNIX tool. "Developed" could be the wrong word to use at that point in C's existence. It was originally designed and written by one Dennis Ritchie and is a descendant of the ALGOL family of languages. Why the name C? Well, its immediate predecessor was – you guessed it – "B"! Around Bell, C took off and in the mid 70's found its way into US universities. By 1980, several independent C compilers were already available and C heralded as the greatest thing to happen to the silicon chip since electricity.

C's popularity has also meant that it has become available on non-UNIX systems – as this Aztec compiler for the Apple.

So, who would use C? In Australia C has, as in the US, found its way into the universities and gradually I daresay will be far more widely used. At present however, only one major piece of popular micro software written in C springs to mind – that's Wordstar 2000 – sorry, but you need an IBM with heaps of memory and many dollars to run this gem. For this reason I think that initially the greatest users (on micros) will be students learning the language and possibly the odd software developer.

Therefore, if your BASIC is weak, your PASCAL non-existent and you thought that ALGOL was a type of beverage, you may find it easier on the soul to stop reading at this point. But, if you're into programming then chances are in the next few years if your're going to be successful, you will probably be using C.

AZTEC C65	– C Compiler – 5 disks and comprehensive manual
Requirements	– DOS 3.3, 2 disk drives
Cost	– around $350
Available	– CompuMusic (see advert. inside cover)

About the Aztec C Compiler

The Aztec range of C compilers is already proven in the US on a number of machines. This is a review of the C65 version for the Apple.

C is a structured language allowing programmers to write fast, efficient and portable programs, that are easily commented and debugged. The Aztec compilers follow the Kernighan and Richie language definition (the C programming language), closer than most other C compilers on the market. This is a very important consideration when trying to write transportable programs, and when trying to implement examples from text books or magazines.

Performance – ease of use

The first program I wrote is shown in table 1. Its purpose was to evaluate the facility with which the compiler could be used. It was very easy, following the language definition closely, with the exception that the LN command had to be used for linking (LINKING turns the compiled program into a .COM file on the disk so that it can be run by just typing the .COM file name).

The commands and times for each stage are shown below. My program was in a file "TEST.C".

see sep strip-in

C65 TEST.C 12 seconds (compiler 1st pass) [16]
9 seconds (compiler 2nd pass) [5]

LN TEST.REL SH65.LIB 92 seconds (this is the linker) [21]

TEST (this command ran my program)
Hello, world (the output)

As you can see the commands to compile and link were straightforward.

The times quoted include disk access. The times in square brackets [ ]are for the same program compiled with the BDS C compiler on a Z80 machine (NEC 8001B). The BDS compiler remains one of the fastest around, but it is not as close to the C language definition as the Aztec (see below).

FILE TEST.C

```
main ()
{
   printf ("hello world \n");
}
```

Table 1 Simple program to evaluate ease of use.

Performance – standard implementation

The test program I chose for this is given in table 2. It does three things:

a) Defines a structure, the most powerful feature of the language.

b) Initializes an array of that structure type.

c) Implicitly sets the size of the array during initialization.

I chose this as it is part of the language definition (page 124 – The C programming language), and my favourite compiler BDS-C refuses to compile it.

The Aztec C compiled this without errors, initializing the values and setting the array size.

The program basically declares a simple structure of just a letter and an integer. It then initializes this to all the vowels, and sets the integer part to zero. The array size is not declared within the **[ ]** brackets, since the compiler has the initializing values and should be able to calculate the size itself.

FILE TEST2.C

Table 2 – 2nd test program

```
main ()
{
static struct key {
              char *letterptr;
              int  vwlcount;
        }  vwlarray[] = {
                "a",0,
                "e",0,
                "i",0,
                "o",0,
                "u",0
};
/*  rest of program  that uses "vwlarray" to count
    the occurence of vowels in a file"  */
}
```

Performance – speed

In addition to performing well against other compilers the Aztec C allows:

a) Assembly language modules or functions to be combined with the C during linking.

b) Assembly language listings of the compiled code allow the program to be analysed and altered where critical timing loops require some direct coding in assembly language.

c) A pseudo-code option allows the program to be reduced in size, but I would expect the penalty paid in reduced speed would normally invalidate this option. (Add more memory, it's cheap! Or make use of the overlay functions available.)

d) The overlay options allow the memory limitations of the Apple to be overcome to a great extent. Overlays allow portions of a program to be loaded from disk as required, and then "overlaid" with other portions after they have been used.

Support software and uses

Libraries – The libraries with Aztec are excellent, which is as should be with any C compiler these days. The libraries come complete with source listings, which allows the programmer to see exactly how the library functions are being performed, and also to adapt any of these to make new functions. (It saves having to re-invent the wheel).

Documentation

The manual is very good, with clear legible print. Using the first chapter "Tutorial Introduction", I wrote, compiled and linked the first program without having to read the detailed chapters on each function.

License agreements

The standard agreement applies, the compiler itself you cannot resell, but any programs you write and compile (even using their standard library functions), are yours to resell, rent out, as you see fit.

Problems

1. No asynchronous monitoring of important events – handling of interrupts, break keys, I/O failure. (You have to program for this.)
2. " " keys, and " " have to be typed with two keystrokes since these keys do not exist on the Apple II+ I was using.
3. Using their VED editor it prompted me to use "q!", which didn't work. The manual was correct with ":q!". How about fixing the prompt in the software?.
4. The manual correctly stated that it may not work with modified DOS systems. It didn't work with my fast DOS, but worked correctly with the standard DOS.
5. There are no debug facilities to allow the setting of breakpoints ect, during debugging facilities. This could make debugging a large problem very painful.

Attributes

1. Close to language standard.
2. Good compile/link error diagnostics.
3. Good source listings.
4. Utilities can select individual functions out of the libraries, and also create custom libraries.
5. It supports overlays.

Conclusion

I liked it for its compatibility to the standard. For general use, and for beginners it is excellent as the examples in books will work. ☐

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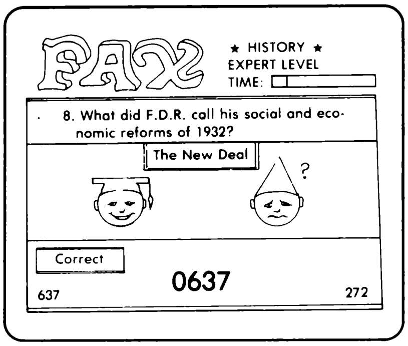

8. What did F.D.R. call his social and economic reforms of 1932?

FAX:	**Quiz with a difference 2 disks (3 sides) and instructions**
Requirements:	**DOS 3.3**
Cost:	**$35.95**
Available:	**Beagle CS**

For all those into Trivial Pursuit or with aspirations of winning "Sale of the Century" or "Mastermind", Fax is right up your alley.

Fax is billed as "arcade quiz" and so you would expect a little more than to be presented with questions in monotonous regularity. In fact your expectations are not dashed for Fax is fast, and if played against an opponent is decidedly deadly.

In effect you try to beat a time limit and gain points accordingly. The usual format of the questions is to give you a choice of four alternatives of which only one is correct. In the one player game the 1-4 keys are used and you try to beat your best score. In the two player game the 6-9 keys are added for the second player – we found we had to stick labels over 6-9 when playing because it took too long for the brain to say 6 is 1, press 6).

Problem? Not at all – due to the close proximity of players (necessitated by the keyboard) and the activity generated, I can certainly recommend Fax as an ice-breaker at computer parties.

What about the questions? Well, there are four categories viz. Sports, History, Entertainment and Grab Bag, and three levels viz. Novice, Expert and Genius. We played Grab Bag at Novice level and so only had easy ones like "What's the planet closest to the earth?" and "How long was the longest moustache?" Other questions (I am led to believe) are a touch more conducive to guesswork.

I found two major irritations with the program. The first was the question "Who is going to win this game?

1. You
2. Me
3. The person with the highest score
4. No one"

I stupidly thought I was.

The second was the dunce head (complete with sarcastic comment like "are we going to switch our brains on?") that I saw a little too often for my ego in mixed company.

All in all, I found this a very entertaining program, and a must if you're the type of person who switches on the Apple when a few people drop in. The only shortcoming that was evident to me was the inability to enter my own questions – however, with almost 4000 of them there, I may never run out.

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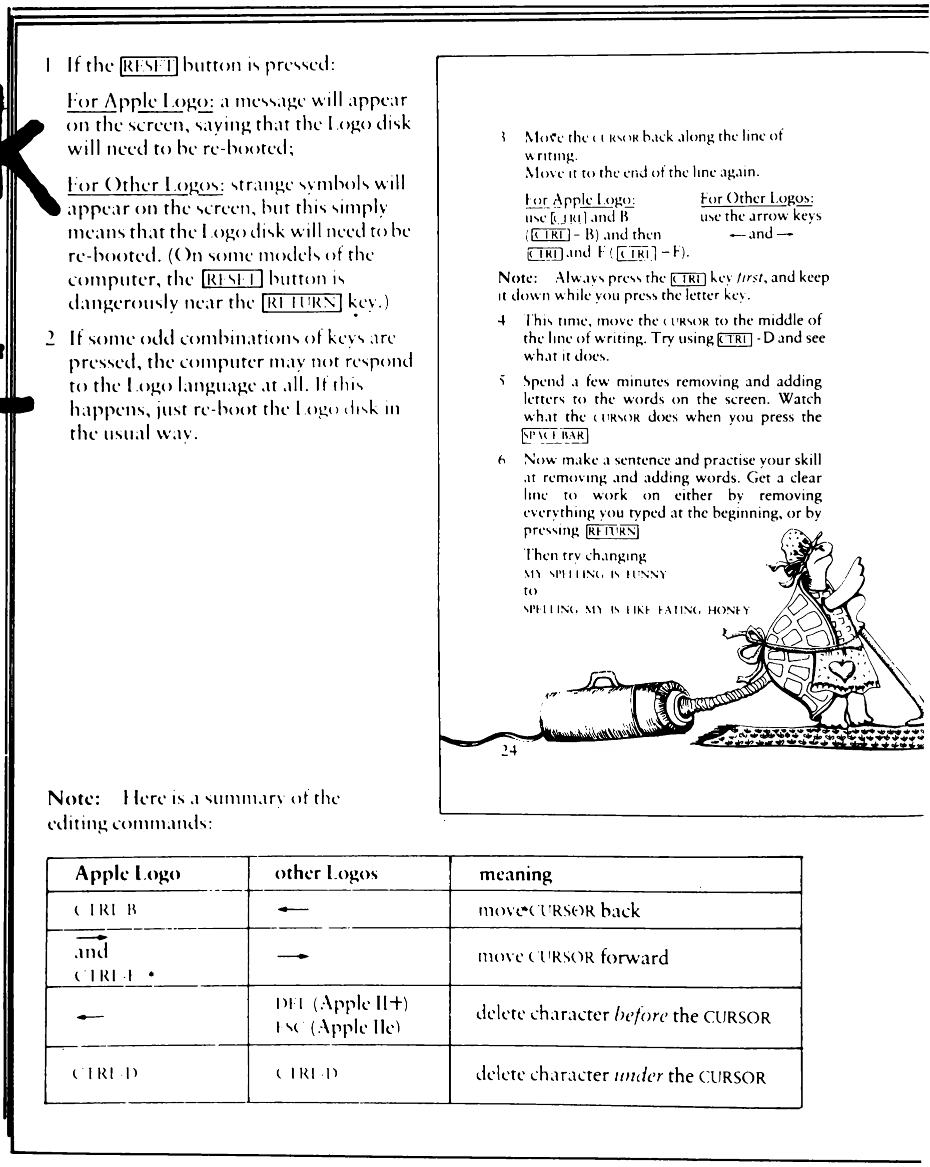
TONE UP AT THE
TERMINALS

Let's talk Apple Turtle

Title: Let's Talk Apple Turtle
Author: Liddy Nevile & Carolyn Dowling
Publisher: Prentice-Hall
Cost: $5.95 (kids), $15.95 (Teacher/parent)
Available: Beagle C.S.



1 If the RESET button is pressed:

For Apple Logo: a message will appear on the screen, saying that the Logo disk will need to be re-booted;

For Other Logos: strange symbols will appear on the screen, but this simply means that the Logo disk will need to be re-booted. (On some models of the computer, the RESET button is dangerously near the RETURN key.)

2 If some odd combinations of keys are pressed, the computer may not respond to the Logo language at all. If this happens, just re-boot the Logo disk in the usual way.

3 Move the CURSOR back along the line of writing.
Move it to the end of the line again.

For Apple Logo:	For Other Logos:
use CTRL and B (CTRL - B) and then CTRL and F (CTRL - F).	use the arrow keys ← and →

Note: Always press the CTRL key *first*, and keep it down while you press the letter key.

4 This time, move the CURSOR to the middle of the line of writing. Try using CTRL - D and see what it does.

5 Spend a few minutes removing and adding letters to the words on the screen. Watch what the CURSOR does when you press the SPACE BAR

6 Now make a sentence and practise your skill at removing and adding words. Get a clear line to work on either by removing everything you typed at the beginning, or by pressing RETURN

Then try changing
MY SPELLING IS FUNNY
to
SPELLING MY IS LIKE EATING HONEY

24

Note: Here is a summary of the editing commands:

Apple Logo	other Logos	meaning
CTRL B	←	move CURSOR back
→ and CTRL F	→	move CURSOR forward
←	DEL (Apple II+) ESC (Apple IIe)	delete character *before* the CURSOR
CTRL D	CTRL D	delete character *under* the CURSOR

If you have Logo on your Apple and a child, or class of children in the 7 to 12 age group, and you're wondering how to get it all together, then wonder no more. "Let's Talk Apple Logo" is the way to do it.

There are in effect two books one needs to obtain in order utilize this work to its full potential – the children's book and the Teacher/Parent book. This is because – thank goodness – someone has realized two very basic facts:

1. Children require help and guidance when learning about computers and certainly when learning languages.
2. Teachers and parents may require help in giving help. This is particularly true when a teacher wants to get into LOGO but knows little more about it than the children.

A prime example of a book where these two points were overlooked is Abelson's "LOGO for the Apple II". The book is excellent – I own a copy and use it myself, but it assumes that the reader has computer knowledge. Unfortunately this is sometimes a dangerous assumption to make and I am sure that many who bought Harry's book as an introductory text, have it sitting there gathering dust.

Nevile and Dowling did not make any mistake in content or presentation in "Let's Talk Apple Turtle".

The children's book shows thought. There is not a mass of information presented, rather there are activities both at the terminal and away from the hardware. I found this refreshing, as from personal experience you seldom have 30 odd Apples in a class and standing around looking over shoulders is bad practice. There is nothing wrong with pen and paper when introducing computers and the activities suggested integrate very well. Then, there is the format. The kid's book has LARGER text, pictures, can be written in, coloured in and comes at a price which would allow everyone in the class to have their own. And, the vocabulary is suited to the age group. I am tempted to say "amazing".

The Teacher/Parent book contains a shrunken version of the children's; explaining the activities and trouble-shooting while the teacher is on the same page as the child. This is not a new concept as most school/college/uni texts come in an educator's version as well as student's. The problem usually is that this educator's version is not readily available – I believe to the detriment of students. In the case of "Let's Talk Apple Turtle" it is readily available, and though it would be of absolutely no benefit to primary children, is great for parents who would like to help or extend their children.

Overall I can say that I was reasonably impressed. It is good material for introducing the absolute beginner to a high level computer language, particularly where that beginner may still be learning reading, writing and arithmetic.

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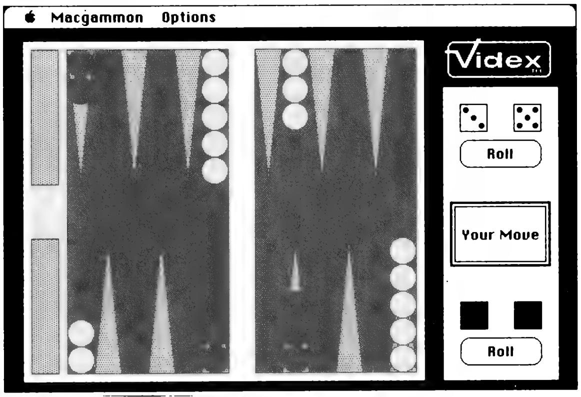
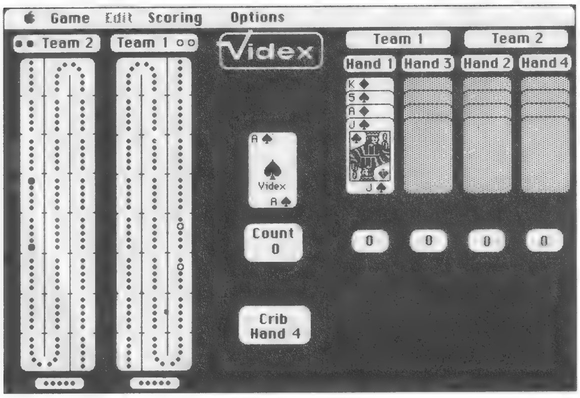
Thinking Mac





MACGAMMON & CRIBBAGE – Thinking Entertainment
– 1 disk (3.5") instructions and Goren's book – "Modern Backgammon Complete"
Requirements – Mac
Cost – $65.00
Available – CompuMusic (02) 692 9293

I If you are a gambling person who wants to sharpen those skills which will ensure success at this ancient sport, then MacGammon will provide you with a worthy opponent. For the beginner, here is someone who will teach you without wildly screaming abuse!

Serious backgammon playing is SERIOUS. Dollars, if not in sight, lie close to the board and I am told that pointy objects are usually not too far from reach. Afternoon backgammon, on the other hand, is a pleasant rainy day family pastime. Those unaware of the game may be a little perplexed as to how something with a finite number of moves and a set of rules shorter than chequers can at one end drive people crazy while at the other, entertain children. The fact of the matter is that backgammon is a dice game and the elements of chance and luck are prominent.

The game of backgammon is played on a board with 24 spots, by two opponents with 15 men each. The object of the game is to bring all your men home and then remove them from the board. The first person to achieve this state of nirvana, is the winner. Gambling is done on the number of men off the board, the number of men on the inner table (home), the number of men on the outer table, and the particular state of the doubling cube.

The doubling cube is worthy of mention. It is a cube with the numbers 2-4-8-16-32-64 on it. Initially accessible by either player, the offerer of the cube gives the opponent the choice of doubling the stakes or SURRENDERING THE GAME. Nasty! If the cube is accepted, it becomes the property of that accepting player who can at any time after, offer it back with the next highest side showing. Refusal means the loss not of one game, but the preceding number of games shown on the cube. Nastier. For family games the cube is seldom used. In serious games it can be manipulated, toyed with, looked at intently or used almost as often as the dice.

Clearly, backgammon is a game where you could find yourself sitting opposite a very unfriendly human being indeed. In fact it is not uncommon for this mass of emotion to have been your spouse, best friend or relation. This is where the Mac comes in. At the top end it will allow you to practise those qualities which will reduce people to whimps. At the other end it will provide you with play as you want it. Forget cubes, forget sly strategy and just move the mouse. For beginners and those who know the rules, "Goren's Backgammon Complete" is included. This is an excellent book of around 190 pages, which tutors you through the bad rolls as well as the good.

The bonus on this disk is **cribbage**. It would take a while to explain the rules of this card game, so I will confine myself to the program.

Cribbage is also a balance of strategy and luck so the Mac is a good opponent. In games such as this, particularly where there are levels of play, the computer invariably cheats. Strong words but true. Unfortunately computers lack cunning. and intuition, and so once you work out how they play, they lose 100% of the time. To balance this, level 1 may allow the computer to "peek" at one of your cards. At higher levels more of your hand may be known. This means that the computer can handle itself with the best and you can adjust your level so that the games are stimulatingly interesting, while you win a good percentage of them. As your skill increases, you can be generous enough to let the Mac see more.

As with MacGammon, there are variations of play possible, coupled with the ease of mouse.

Overall, this is an excellent package for both the beginner and the person who loves to play but can't find an opponent worthy. ☐

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GENE STEPHAN, Editor AAR.

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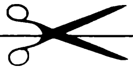

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Inside the Apple IIe – a rare book

Title: **Inside the Apple IIe**
Author: **Gary B. Little**
Publisher: **Prentice-Hall Australia**
Cost: **$31.50**
Size: **around 400 pages**
Available: **Beagle CS**

It is rare for me to call a book uneqivocally excellent. "Inside the Apple IIe" however, is a rare book.

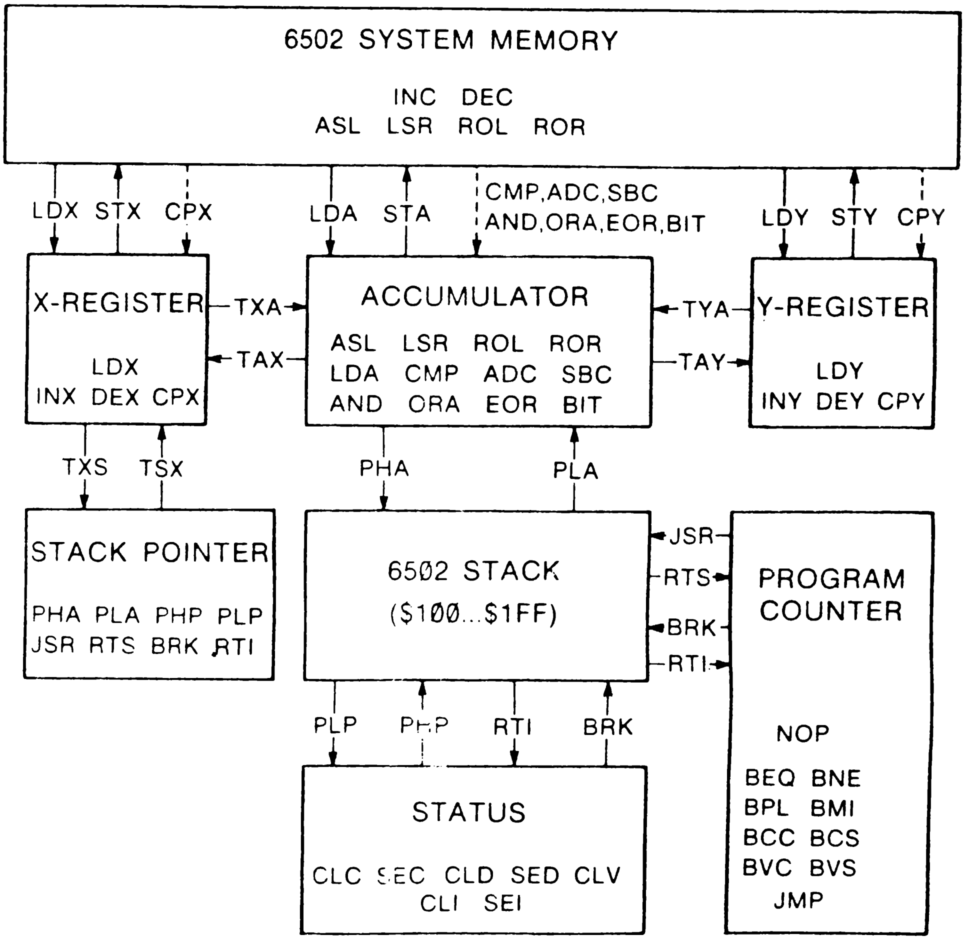
It is rare for me to call a book uneqivocally excellent. "Inside the Apple IIe" however, is a rare book.

The first chapter starts with the inevitable trace through Apple history, and for eight pages I sat there thinking "oh no"; you could just about imagine how many times a person editing an Apple magazine would have heard Apple history. Then, however, the story took a turn, and I found myself inside the Apple!

From that point I was treated to a wealth of information – both background and directly useful.

Chapt 1. Introduction to the IIe
Chapt 2. The 6502
Chapt 3. The System Monitor
Chapt 4. Applesoft BASIC
Chapt 5. DOS (incl. ProDOS)
Chapt 6. Character Input & Keyboard
Chapt 7. Character & Graphic Output & Video Display Modes
Chapt 8. Memory Management
Chapt 9. Speaker & Cassette Port
Chapt 10. Game I/O Connector
Chapt 11. Peripheral Card Expansion Slots
Appendices

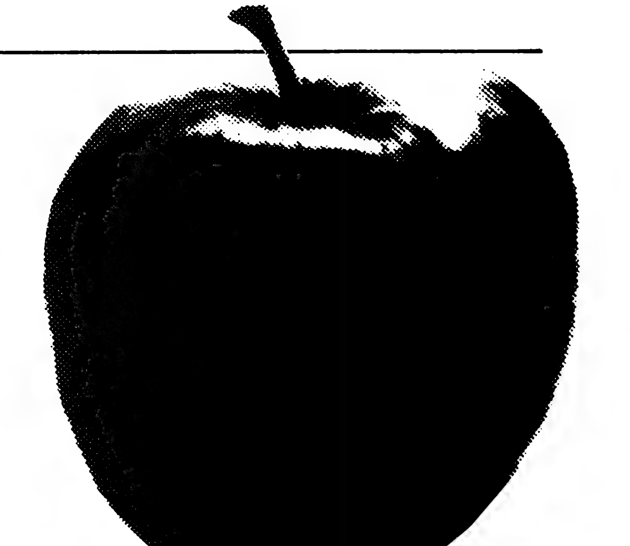
If the contents sound impressive, it's because they are. The first three chapters deal with the guts of the IIe. If you are an absolute beginner don't worry. The information is presented logically in each chapter so you learn for example, that the CONTROL key is depressed and held, and then the C key is pressed in order to generate <CONTROL C , but it's not too much later that you are introduced to the internal associations of the 6502 (see Figure 1). Figures like this and Tables abound so the information is clear and readily accessible.



NOTE: Solid arrows indicate a transfer of data.
Dashed arrows indicate a transfer of information.

Figure 1. Usage chart of 6502 instructions.

The next four chapters deal with the side of the IIe that most users see – BASIC, DOS, text and graphics. The information is not a re-hash of the manuals. Rather, it is presumed that the user has some APPLESOFT knowledge and can CAT a disk. What is covered is the way in which these systems function, and although most may shy at reading about interpreters and sectoring, I can assure you that the text is highly readable. Figure 2 gives an example



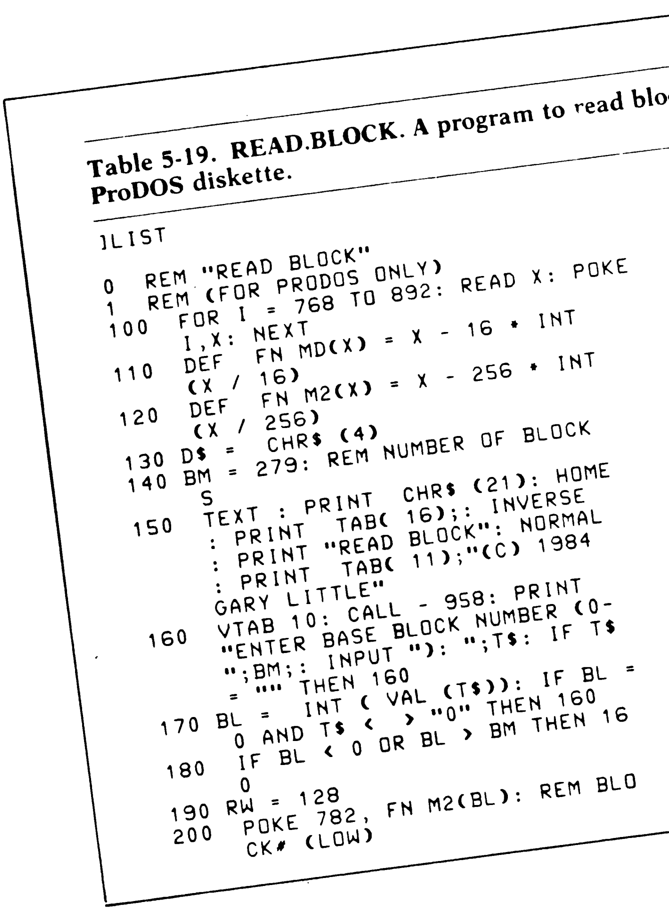


Table 5-19. READ.BLOCK. A program to read blocks on a ProDOS diskette.

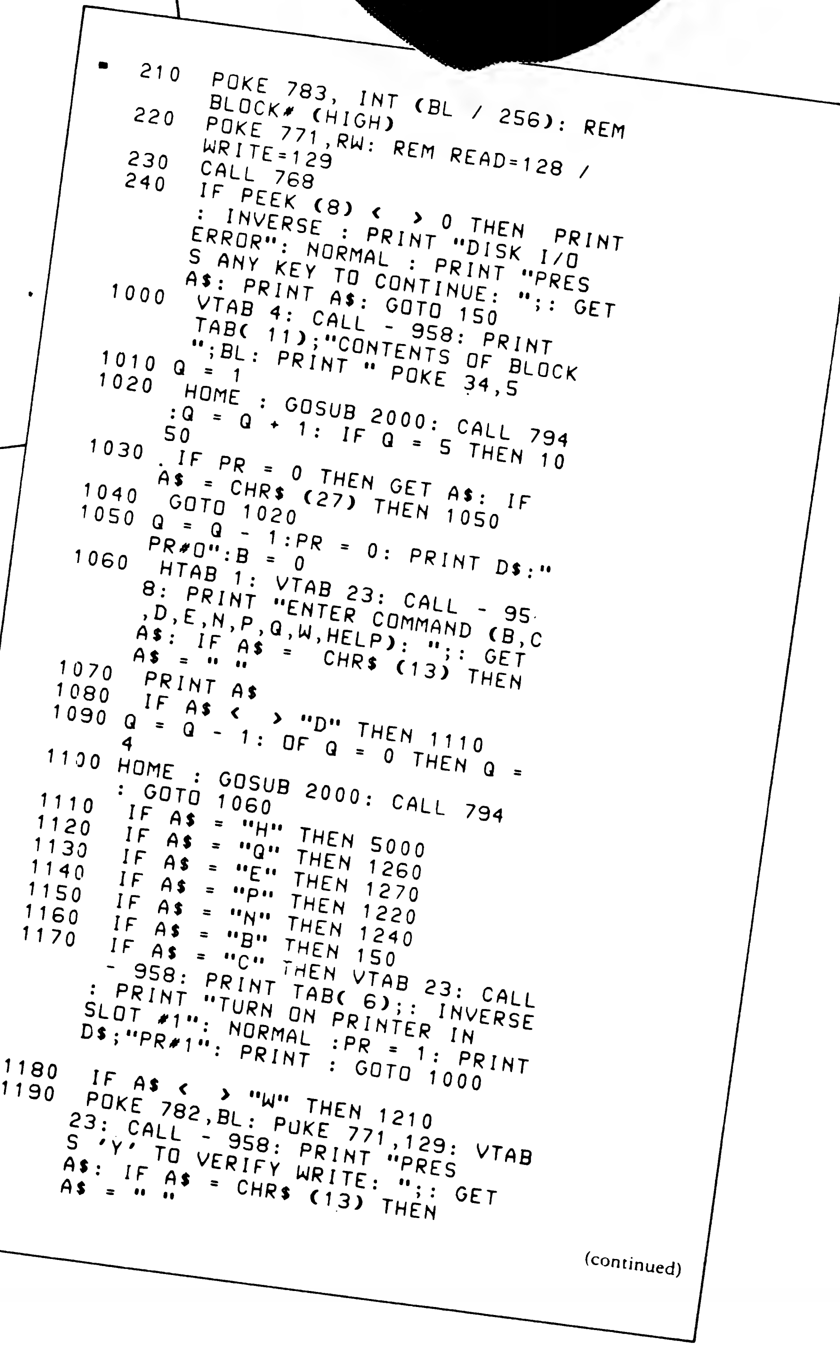
```
]LIST

0  REM "READ BLOCK"
1  REM (FOR PRODOS ONLY)
100  FOR I = 768 TO 892: READ X: POKE
     I,X: NEXT
110  DEF  FN MD(X) = X - 16 * INT
     (X / 16)
120  DEF  FN M2(X) = X - 256 * INT
     (X / 256)
130 D$ =  CHR$ (4)
140 BM = 279: REM NUMBER OF BLOCK
     S
150  TEXT : PRINT  CHR$ (21): HOME
     : PRINT  TAB( 16);: INVERSE
     : PRINT "READ BLOCK": NORMAL
     : PRINT  TAB( 11);"(C) 1984
     GARY LITTLE"
160  VTAB 10: CALL - 958: PRINT
     "ENTER BASE BLOCK NUMBER (0-
     ";BM;: INPUT "): ";T$: IF T$
     = "" THEN 160
170 BL =  INT ( VAL (T$)): IF BL =
     0 AND T$ <  > "0" THEN 160
180  IF BL < 0 OR BL > BM THEN 16
     0
190 RW = 128
200  POKE 782, FN M2(BL): REM BLO
     CK# (LOW)
```

of the type of program presented in this book and many more are in assembler.

Chapter 8 looks at the way the IIe manages memory, and I think has one of the clearest explanations of Bank Switching that I've ever read (not that it is difficult). Again, you may never want to get your feet wet playing with the locations identified, but knowledge is power, knowing the capabilities, or just being aware of what goes on under the cover, is what separates the competent user from the ordinary typist.

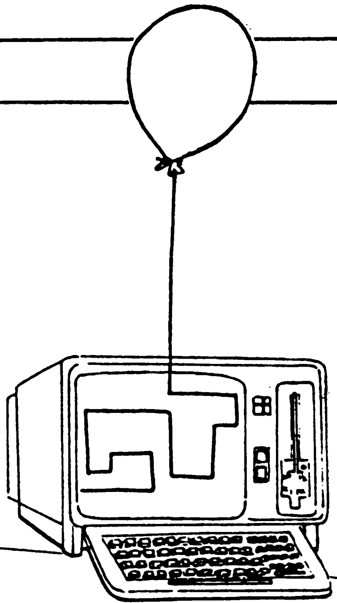
The final chapters are devoted to the peripherals; cards, game I/O and cassette port. Chapter 10 in fact has a do-it-yourself project based around flashing LEDs by using the game I/O. I wish I had thought of it myself as it is at the same level as the PADDLES TO MEASURE VELOCITY project I gave last month.

To sum up, this is a book which should be on the shelf alongside the manuals of every IIe owner. A complete book which is worth buying just for the references at the end of each chapter. ☐



```
▪ 210  POKE 783, INT (BL / 256): REM
       BLOCK# (HIGH)
  220  POKE 771,RW: REM READ=128 /
       WRITE=129
  230  CALL 768
  240  IF PEEK (8) <  > 0 THEN  PRINT
       : INVERSE : PRINT "DISK I/O
       ERROR": NORMAL : PRINT "PRES
       S ANY KEY TO CONTINUE: ";: GET
       A$: PRINT A$: GOTO 150
 1000  VTAB 4: CALL - 958: PRINT
       TAB( 11);"CONTENTS OF BLOCK
       ";BL: PRINT " POKE 34,5
 1010 Q = 1
 1020  HOME : GOSUB 2000: CALL 794
      :Q = Q + 1: IF Q = 5 THEN 10
      50
 1030 . IF PR = 0 THEN GET A$: IF
      A$ = CHR$ (27) THEN 1050
 1040  GOTO 1020
 1050 Q = Q - 1:PR = 0: PRINT D$;"
      PR#0":B = 0
 1060  HTAB 1: VTAB 23: CALL - 95
      8: PRINT "ENTER COMMAND (B,C
      ,D,E,N,P,Q,W,HELP): ";: GET
      A$: IF A$ =  CHR$ (13) THEN
      A$ = " "
 1070  PRINT A$
 1080  IF A$ <  > "D" THEN 1110
 1090 Q = Q - 1: OF Q = 0 THEN Q =
      4
 1100 HOME : GOSUB 2000: CALL 794
      : GOTO 1060
 1110  IF A$ = "H" THEN 5000
 1120  IF A$ = "Q" THEN 1260
 1130  IF A$ = "E" THEN 1270
 1140  IF A$ = "P" THEN 1220
 1150  IF A$ = "N" THEN 1240
 1160  IF A$ = "B" THEN 150
 1170  IF A$ = "C" THEN VTAB 23: CALL
      - 958: PRINT TAB( 6);: INVERSE
      : PRINT "TURN ON PRINTER IN
      SLOT #1": NORMAL :PR = 1: PRINT
      D$;"PR#1": PRINT : GOTO 1000
 1180  IF A$ <  > "W" THEN 1210
 1190  POKE 782,BL: PUKE 771,129: VTAB
      23: CALL - 958: PRINT "PRES
      S 'Y' TO VERIFY WRITE: ";: GET
      A$: IF A$ = CHR$ (13) THEN
      A$ = " "
```

(continued)



```
1200  PRINT A$: IF A$ = "Y" THEN
      CALL 768:RW = 128: VTAB 23:
      CALL - 958: PRINT "WRITE C
      OMPLETED. PRESS ANY KEY: ";:
       GET A$: GOTO 1060
1210  GOTO 5000
1220 BL = BL - 1: IF BL = - 1 THEN
      BL = 279
1230  GOTO 190
1240 BL = BL + 1: IF BL > 279 THEN
      BL = 0
1250  GOTO 190
1260  TEXT : HOME : END
1270 V = 8:H = 3: VTAB 5: PRINT TAB(
     6);: INVERSE : PRINT "I=UP M
     =DOWN J=LEFT K=RIGHT": NORMAL
1280  HTAB 1: VTAB 23: CALL - 95
     8: PRINT TAB( 6);"PRESS ";:
      INVERSE : PRINT "ESC";: NORMAL
     : PRINT " TO LEAVE EDITOR"
1290  REM
1300  GOSUB 1500: GET A$
1310 LC = 16384 + 128 * (Q - 1) +
     8 * V + H:Y = PEEK (LC):X =
      ASC (A$)
1320  IF A$ = CHR$ (27) THEN HTAB
     1: VTAB 5: CALL - 868: GOTO
     1060
1330  IF A$ < > "I" THEN 1370
1340 B = 0:V = V - 1: IF V > = 0
      THEN 1300
1350 V = 15:Q = Q - 1: IF Q < 1 THEN
     Q = 4
1360  GOSUB 2000: HOME : CALL 794
     : GOTO 1280
1370  IF A$ = "J" THEN B = 0:H =
     H - 1: IF H = - 1 THEN H =
     7
1380  IF A$ = "K" THEN B = 0:H =
     H + 1: IF H = 8 THEN H = 0
1390  IF A$ < > "M" THEN 1430
1400 B = 0:V = V + 1: IF V < 16 THEN
     1300
1410 V = 0:Q = Q + 1: IF Q = 5 THEN
     Q = 1
1420  GOTO 1360
1430  IF B = 0 THEN Y = FN MD(Y)
     + 16 * (X - 48) * (X < = 5
     7) + 16 * (X - 55) * (X > =
     65)
```

```
1440  IF B = 1 THEN Y = 16 * INT
     (Y / 16) + (X - 48) * (X < =
     57) + (X - 55) * (X > = 65)

1450 X = ASC (A$): IF (X > = 48
      AND X < = 57) OR (X > = 6
     5 AND X < = 70) THEN PRINT
     A$;: POKE ( PEEK (40) + 256 *
      PEEK (41) + 31 + H),Y: POKE
     LC,Y: IF B = 0 THEN CALL 64
     500:B = 1
1460  IF X = 8 AND B = 1 THEN B =
     0
1470  IF X = 21 AND B = 0 THEN B =
     1
1480  GOTO 1300
1490  CALL - 167
1500  VTAB. V + 6: HTAB 3 * H + 7 +
     B: RETURN
2000  IF Q = 1 THEN POKE 795,0: POKE
     799,64
2010  IF Q = 2 THEN POKE 795,128
     : POKE 799,64
2020  IF Q = 3 THEN POKE 795,0: POKE
     799,65
2030  IF Q = 4 THEN POKE 795,128
     : POKE 799,65
2040  RETURN
5000  HOME : PRINT TAB( 10);"SUM
     MARY OF COMMANDS": PRINT TAB(
     10);"==================": PRINT

5010  PRINT "B -- RESET BASE BLOC
     K"
5020  PRINT "C -- COPY BLOCK CONT
     ENTS TO PRINTER"
5030  PRINT "D -- DISPLAY PREVIOU
     S 1/4 BLOCK"
5040  PRINT "E -- EDIT THE CURREN
     T BLOCK"
5050  PRINT "N -- READ THE NEXT B
     LOCK"
5060  PRINT "P -- READ THE PREVIO
     US BLOCK"
5070  PRINT "Q -- QUIT THE PROGRA
     M"
5080  PRINT "W -- WRITE THE BLOCK
      TO DISK"
5090  PRINT : PRINT "PRESS ANY KE
     Y TO CONTINUE: ";: GET A$: PRINT
     A$: GOTO 1100
```

```
8000  DATA 32,0,191,128,10,3,144,
     8,176,11,3,96,0,64,0,0,169,0
     ,133,8,96,169,1,133,8,96,169
8010 ,0,133,6
     DATA 169,64,133,7,162,0,160
     ,0,56,165,7,233,64,32,218,25
     3,165,6,32,218,253,169,186,3
8020 2,237,253,169,160,32,237
     DATA 253,177,6,32,218,253,1
     69,160,32,237,253,200,192,8,
     208,241,169,160,32,237,253,1
     60,0,177,6,9,128,201,160,176
8030 DATA 2,169,174,32,237,253,2
     00,192,8,208,238,169,141,32,
     237,253,24,165,6,105,8,133,6
8040 ,165,7,105,0,133,7,232
     DATA 224,16,208,168,96
```

Carriers at War

by Graham Cousens

Sometimes it's hard to be a reviewer. How can you possibly say anything unkind about a program that's brilliantly constructed, complex enough never to be dull, ranges instantly from the big picture to the smallest detail and back again, is well documented and relatively easy to learn?

Particularly as a patriotic Aussie, how can one not enthuse about such a technically admirable local product?

On the other hand, how can you be effusive about a program that, having tried once, you have not the slightest desire to run again?

It all comes back to the old critic's dilemma: to be objective or subjective.

Let's be objective first and subjective later.

Pearl Harbour and the Coral Sea

Carriers At War is an amazingly good adaptation of a war game to a microcomputer – or rather war **games**, since this one program gives you the opportunity to fight the battles of Pearl Harbour, the Coral Sea, Midway, the Eastern Solomons, Santa Cruz or the Philippine Sea.

All these have scenarios built in. If that isn't enough variety, the manual tells you how to construct your own scenario for the Raid on Ceylon. And if you're really dedicated the same instructions let you create your own scenario from scratch.

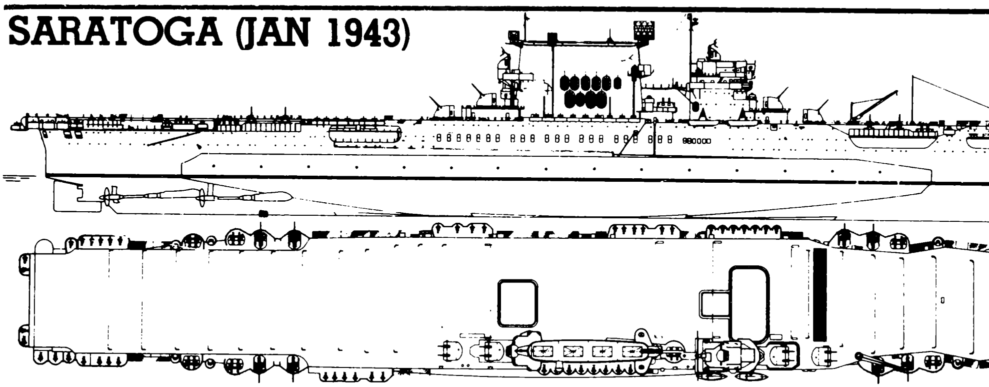
After that you can start to get into the subtleties of the game, using one of the 32 – repeat 32 – menus. There are action menus, information menus, single function menus and even branch menus that show you the way to other menus.

Changing the ground rules

Or, if you like, you can change some of the ground rules. The manual even gives some suggestions. For example what difference will it make to Pearl Harbour if the US

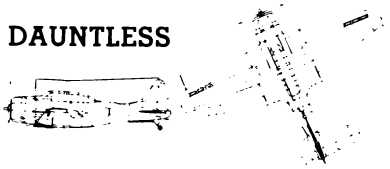
THE FORCES

SARATOGA (JAN 1943)

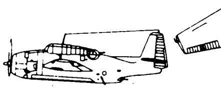


WILDCAT

DAUNTLESS



AVENGER



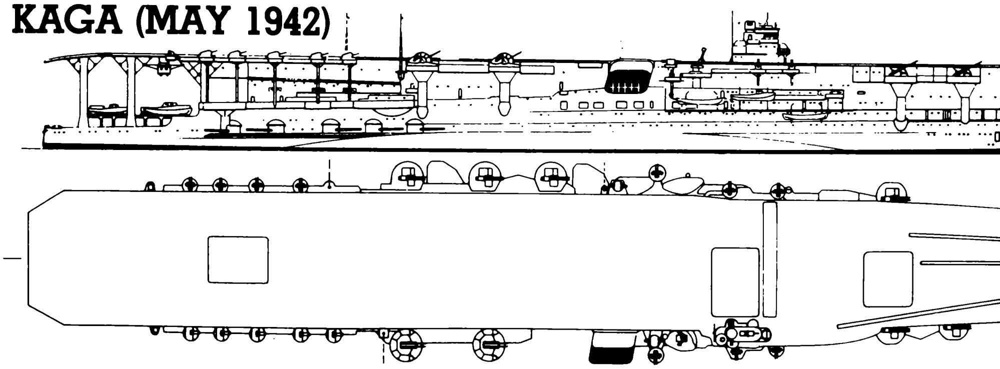
THE AIRCRAFT

	Fighters		Dive Bombers		Torpedo Bombers	
	●	🇺🇸	●	🇺🇸	●	🇺🇸
	Zero	Wildcat	Val	Dauntless	Kate	Avenger
Max Speed (kt)	289	276	209	217	205	224
Cruising Speed (kt)	180	135	160	132	140	133
Max Range (nm)	1680	700	800	1170	1075	1000
Service Ceiling (ft)	32810	34900	30050	27100	27100	21400
Max Weight (lb)	6164	7952	8047	9407	9039	15905
Wingspan (ft)	39.4	38.0	47.1	41.5	50.9	54.1
Length (ft)	29.7	28.8	33.5	32.7	33.8	40.0
Armament	2x20mmC 2x7.7mmMG	6x.5inMG	3x7.7mmMG	2x.5inMG 2x.3inMG	1x7.7mmMG	1x.5inMG 2x.3inMG
Crew	1	1	2	2	3	3
Bomb Load (lb)	264	200	813	1200	1764 or torpedo	1600 or torpedo

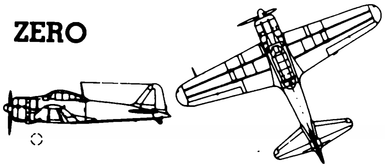
THE CARRIERS

Displacement (tons)	
Length — overall (ft)	
Beam (ft)	
Draught (ft)	
Max Speed (kts)	
Armour-belt (in)	
Range (nm @ 15 kts)	
Armament	
	22 2
Aircraft	
Crew	

KAGA (MAY 1942)



ZERO



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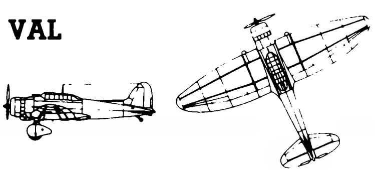

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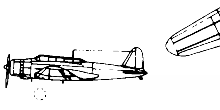

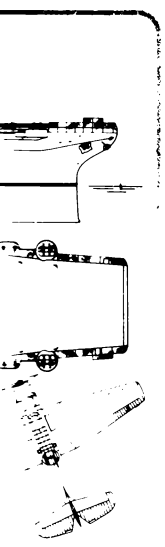

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28.5	33.0
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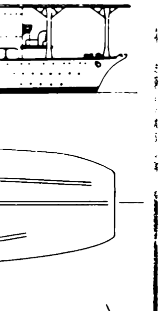
DP	32 40mmAA
AA	54 20mmAA
90	96
2016	2327



forces **expect** the attack – or if they have more forces in Hawaii?

The game proceeds logically and clearly. Players (either one against the computer, two playing each other, or many players taking the roles of generals for each country) can consult a strategic map of the whole battlefield or tactical maps of specific areas. They can consult a weather map (critical to the outcome of battles), maps showing location of forces, any details known of enemy forces, details of your own fleet's strength and so on.

Operations are specified in great detail, from fuelling and arming the aircraft on carriers to selecting targets and launching strikes.

All this time the computer is handling the parameters outside your control, from the weather to submarine activity, in a virtuoso display that one can only wonder at.

The designers themselves say that the "80K of crushed machine code" (sounds cruel) that drives the game does so much that even they "are no longer certain exactly how some things happen".

It's easy to believe.

The manual and supporting documentation are excellent, down to details of all Japanese and Allied aircraft of the Pacific War and a lengthy bibliography.

There's evidence of careful thought for the customer, too, with the package even providing gummed labels for the back-up disks (you can copy the copy the master disk once before the built in copy program self-destructs – some concession to the anti-protection gang).

objective verdict: One of the most thoroughly-researched and well-constructed super-adventure-games on the market. Australia can be proud of it.

Now let's get subjective. I am not a war game enthusiast. It's not that I've got more against war than the next man, it's just the complexity of detail that is bread and butter to the war game afficionado doesn't fascinate me.

I'm not a chess fan either, but I can on occasion sit down and enjoy a game of chess against the Apple, at a low level of expertise.

But a chess game, with all its near-infinite variability, seems comfortably finite compared to the range of options behind every move of Carriers At War.

What's the weather? Where are your bases? The enemy's bases? Weapon allocation? Damage statistics? Firing accuracy? Base facilities? Ship vulnerability? And so on and so on and so on.

For a non-war-gamer it's all too much.

For the designers of the program, Roger Keating and Ian Trout from Strategic Studies Group Pty Ltd in Sydney, it isn't enough.

They comment in a postscript to the manual that the Apple's measly 64K was their greatest frustration – "What we could have done with half a megabyte!"

God forbid!

Subjective verdict: For war game freaks only. ☐

The good looking one on the left is Roger Keating. The other one is Ian Trout. "Carriers at War" is their second joint effort and (coincidentally?) Strategic Studies Group's second game release. Both gents are avid game players, amateur historians, lovers of Greek food and red wine, fathers of very clever and beautiful children, ex school teachers and 35 years old. The only real difference is that the gent on the left has more brains.

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Polynomial Regression – Interpolation

by R. Rausch

This program allows the user to calculate a regression using the "least squares" method. I have written the program very simply in order that it may be modified or expanded depending upon use. As it is, up to 100 X,Y pairs may be entered either at the keyboard or from disk. I strongly recommend the use of disk because the program does not lend itself to correcting incorrect data entered from the keyboard. A wordprocessor such as Sandy's will create a TEXT file which can be used by the program and edited by the wordprocessor. The format of the data in such a file should be:

N, X1, Y1, X2, Y2, ... Xn, Yn

where N is the number of data PAIRS followed by each of the pairs separated by a comma up to the last (Xn and Yn).

The program will draw the graphics on the hi-res screen and can output a report to the printer. It can also interpolate. This means that if you enter a value of X, the program will give you the probable Y. Care should be taken when using this function as interpolation outside the lowest and highest X values is statistically dangerous – particularly when using log values. Please also note that for 2nd to 6th order polynomial least squares at least order+1 data pairs are required. ☐

```
 10  REM

 20  TEXT :
     LET A = 0:
     LET A$ =  CHR$ (4):
     TEXT :
     HOME :
     POKE 34,2:
     INVERSE :
     PRINT "***   POLYNOMIAL    INTERPOLATION   *4*":
     NORMAL :
     PRINT :
     HTAB 7:
     PRINT " (1.-6.DEGREE REGRESSION) ":
     PRINT :



 30  FOR P = 1 TO 2000:
     NEXT P:
     VTAB 5:
     PRINT "FOR DATA ANALYSIS. DO NOT EXTRAPOLATE!!":
     PRINT :
     PRINT " X-DATA   (CONCENTRATION)"

 40  PRINT " Y-DATA   (PEAK AREA OR SIGNAL ETC.)":
     FOR P = 1 TO 3500

 50  NEXT P:
     VTAB 7:
     PRINT "                                        ":
     PRINT "                                        ":
     PRINT :
     PRINT :
     DIM A(19),B(19),C(11,11),D(50),E(50),F(50),G(50):
     DIM C$(50),D$(50),H(50),I(50)


 60  INVERSE :
     PRINT "*  START WITH SMALLEST X  (SORTED!)    ":
     NORMAL

 70  PRINT "":
     PRINT " ENTER DATA MANUALLY   (M)   OR ":
     PRINT " FROM DISK ?           (D)":
     HTAB 25:
     INPUT "";E$:
     IF E$ <  > "M" THEN
          GOSUB 1070

 80  IF E$ = "D" THEN
          PRINT :
         PRINT :
         GOTO 160

 90  HOME :
     PRINT "NUMBER OF X-Y-DATA GROUPS (N MAX = 50)":
     PRINT :
     INPUT "                   N = ";F$:
     LET F =  VAL (F$):
     PRINT :
     IF F = 0 THEN
         180

100  PRINT "CONC --> X,  SIGNAL --> Y  AVOID ERRORS":
     PRINT "---------------------------------------".
     POKE 34,12:
     FOR G = 1 TO F:
         VTAB 11:
         PRINT :
         PRINT "     X(";G")            Y(";G")        N=";G

110      LET H = 22


120      VTAB H:
         INPUT "      ";C$(G):
         IF C$(G) = "K" THEN
             LET G = G - 1:
            LET H = H - 1:
            GOTO 130

130      LET D(G) =  VAL (C$(G)):
         IF G >  = 1 AND D(G) = 0 THEN
             PRINT " X= ZERO OR (RETURN) NOT ACCEPTED  !!  ":
            FOR I = 1 TO 1500:
         NEXT I:
         GOTO 110

140      VTAB H:
         HTAB 20:
         INPUT "";D$(G):
         IF D$(G) = "K" THEN
            120
```

```
150      LET G(G) =  VAL (D$(G)):
         PRINT :
         PRINT :
     NEXT :
     TEXT


160  PRINT "*  USE (RETURN) TO SKIP QUESTIONS     ":
     PRINT "WANT (LOG) TRANSFORMATION (Y:N) ?":
     HTAB 38:
     INPUT "";E$:
     IF E$ = "Y" THEN
          GOSUB 790

170  LET A = 0:
     LET L = 0:
     LET N = 0:
     LET O = 0:
     LET P = 0:
     LET Q = 0:
     LET U = 0:
     PRINT :
     PRINT "POLYNOM M (1=LIN;2=SQR.;3=CUB.;MAX=6) ":
     INPUT "          ";M:
     PRINT :
     IF M > 6 THEN
         170

180  IF M = 0 THEN
          HOME :
         PRINT " * BYE *   RESTART BY '& RETURN'":
         END


190  IF M > F - 2 THEN
          PRINT "":
         INVERSE :
         PRINT "MATHEM. NOT ACCEPTABLE; M=<N-2!":
         NORMAL

200  IF M =  < F - 2 THEN
         220

210  PRINT :
     LET A = 0:
     LET L = 0:
     LET N = 0:
     LET O = 0:
     LET P = 0:
     LET Q = 0:
     LET U = 0:
     PRINT :
     PRINT "POLYNOM M (1=LIN;2=SQR;3=CUB.;MAX=6)":
     INPUT "          ";M:
     PRINT :
     IF M > 6 THEN
         170



220  PRINT :
     PRINT " ........PLEASE WAIT.........":
     FOR G = 1 TO 2 * M + 2:
         LET A(G) = 0:
         LET B(G) = 0:
     NEXT :
     FOR J = 1 TO M + 2:
         FOR T = 1 TO M + 2:
             LET C(T,J) = 0:
         NEXT :
     NEXT :
     LET A(1) = F:
     FOR G = 1 TO F:
         LET W = D(G):
         LET X = G(G)

230      FOR J = 2 TO 2 * M + 1:
             LET A(J) = A(J) + W ^ (J - 1):
         NEXT :
         FOR J = 1 TO M + 1:
             LET B(J) = B(J) + X * W ^ (J - 1):
             LET C(J,M + 2) = B(J):
         NEXT :
         LET B(M + 2) = B(M + 2) + X ^ 2:
     NEXT

240  FOR G = 1 TO M + 1:
         FOR J = 1 TO M + 1:
             LET C(G,J) = A(G + J - 1):
         NEXT :
     NEXT :
     FOR S = 1 TO M + 1:
         FOR T = S TO M + 1:
             IF C(T,S) <  > 0 THEN
                  GOTO 260

250      NEXT :
     NEXT :
     PRINT "DATA ERROR ??  ":
     PRINT :
     PRINT " RESTART BY '& RETURN' ":
     PRINT " AND REENTER THE (CORRECT) DATA":
     STOP
```

```
260  GOSUB 290:
     LET C = 1 / C(S,S):
     GOSUB 300:
     FOR T = 1 TO M + 1:
         IF T = S THEN
              GOTO 280

270      LET C =  - C(T,S):
         GOSUB 310


280  NEXT :
     NEXT :
     GOTO 320


290  FOR J = 1 TO M + 2:
         LET B = C(S,J):
         LET C(S,J) = C(T,J):
         LET C(T,J) = B:
     NEXT :
     RETURN

300  FOR J = 1 TO M + 2:
         LET C(S,J) = C * C(S,J):
     NEXT :

     RETURN

310  FOR J = 1 TO M + 2:
         LET C(T,J) = C(T,J) + C * C(S,J):
     NEXT J:
     RETURN

320  PRINT "---------------------------------------":
     PRINT "POLYNOM ";M;". DEGREE":
     PRINT :
     FOR G = 1 TO M + 1:
         PRINT "A";G - 1; TAB( 23);C(G,M + 2):
     NEXT :
     LET A = C(1,M + 2):
     LET L = C(2,M + 2):
     LET N = C(3,M + 2)

330  :
     LET C = C(4,M + 2):
     LET P = C(5,M + 2):
     LET Q = C(6,M + 2):
     LET U = C(7,M + 2):
     LET S = 0:
     FOR G = 2 TO M + 1:
         LET S = S + C(G,M + 2) * (B(G) - A(G) * B(1) / F):
     NEXT



340  LET T = B(M + 2) - B(1) ^ 2 / F:
     LET C = T - S:
     LET G = F - M - 1:
     IF G = 0 THEN
          INVERSE :
         PRINT :
         PRINT :
         PRINT " *  DEGR.OF POLYNOM TOO HIGH !!   * ":
         FOR G = 1 TO 2500:
     NEXT :
     NORMAL :
     GOTO 170



350  IF G =  <  - 1 THEN
          PRINT :
         PRINT :
         INVERSE :
         PRINT " * STATISTIC DATA NON VALID! *":
         NORMAL :
         PRINT :
         INVERSE :
         PRINT "  DEGR.OF POLYNOM TOO HIGH    ":
         NORMAL


360  LET J = S / M:
     LET K = C / G:
     PRINT :
     IF K = 0 THEN
          LET K = 1E - 30


370  PRINT "F"; TAB( 23);J / K:
     PRINT :
     LET J = S / T:
     PRINT "COEFF.DETERMINATION"; TAB( 23);J:
     PRINT "COEFF.REGRESSION"; TAB( 23); SQR (J):
     LET B = J:
     LET Y = C / G:
     PRINT "STANDARD ERROR"; TAB( 23); SQR ( ABS (Y))


380  PRINT "---------------------------------------"

390  INVERSE
```

```
400  PRINT "GRAPH (1) * PRINT (2) * OTH. POLYNOM (3)STATIST.ANA
     LYSIS  (4) * CALCULATIONS (5)":
     NORMAL :
     INPUT "CHOOSE BY (NR); END WITH (0)           ";D:
     TEXT :
     IF D = 0 THEN
          PRINT :
         PRINT " BYE!  RESTART BY '& RETURN'":
         END


410  TEXT :
     HOME :
     ON D GOTO 420,640,170,700,860,950


420  PRINT :
     PRINT "SCALING X AND Y AXIS: (1)     (RETURN)":
     PRINT "CHANGE SCALING :        (0)";
     VTAB 2:
     HTAB 24:
     INPUT "";A1:
     IF B1 = 0 OR C1 = 0 THEN
         440

430  IF A1 = 1 THEN
          GOTO 530


440  PRINT :
     FLASH :
     PRINT "*  START X AND Y AXIS WITH ZERO <<<    *";
     NORMAL :
     PRINT "   (PROGRAM ACCEPTS OTHER DATA,BUT... ":
     VTAB 22:
     PRINT "X-MIN,X-MAX,MARK INTERVL.;X-MAX = "; INT (100 * D(F
     )) / 100;"    ":
     PRINT "

450  VTAB 23:
     HTAB 1:
     INPUT "^";D1:
     VTAB 23:
     HTAB 7:
     INPUT "^";B1:
     VTAB 23:
     HTAB 13:
     INPUT "^";E1:
     PRINT :
     PRINT :
     IF E1 > B1 THEN
          PRINT "":
         PRINT "TICK MARK INTERVAL MUST BE SMALLER !!! ":
         GOTO 450


460  LET F1 = 1E33:
     LET G1 =  - F1:
     FOR G = 1 TO F:
         IF G(G) > F1 THEN
             480

470      LET F1 = G(G):
         LET H1 = G

480      IF G(G) < G1 THEN
             500

490      LET G1 = G(G):
         LET I1 = G


500  NEXT :
     VTAB 22:
     PRINT "Y-MIN = "; INT (100 * F1) / 100" ,Y-MAX = "; INT (1
     00 * G1) / 100" MARK INTERV."

510  VTAB 23:
     HTAB 1:
     INPUT "^";J1:
     VTAB 23:
     HTAB 12:
     INPUT "^";C1:
     VTAB 23:
     HTAB 24:
     INPUT "^";K1:
     IF J1 =  > C1 OR K1 > C1 THEN
          PRINT "":
         PRINT "CHECK Y-SCALING !!":
         FOR I = 1 TO 1000:
     NEXT I:
     GOTO 510

520  LET W =  FRE (0)

530  HGR :
     HCOLOR= 3:
     HPLOT 0,0 TO 279,0 TO 279,159 TO 0,159 TO 0,0:
     FOR G = D1 TO B1 STEP E1:
         LET Z = G:
         GOSUB 620:
         HPLOT W,155 TO W,159:
     NEXT :
```

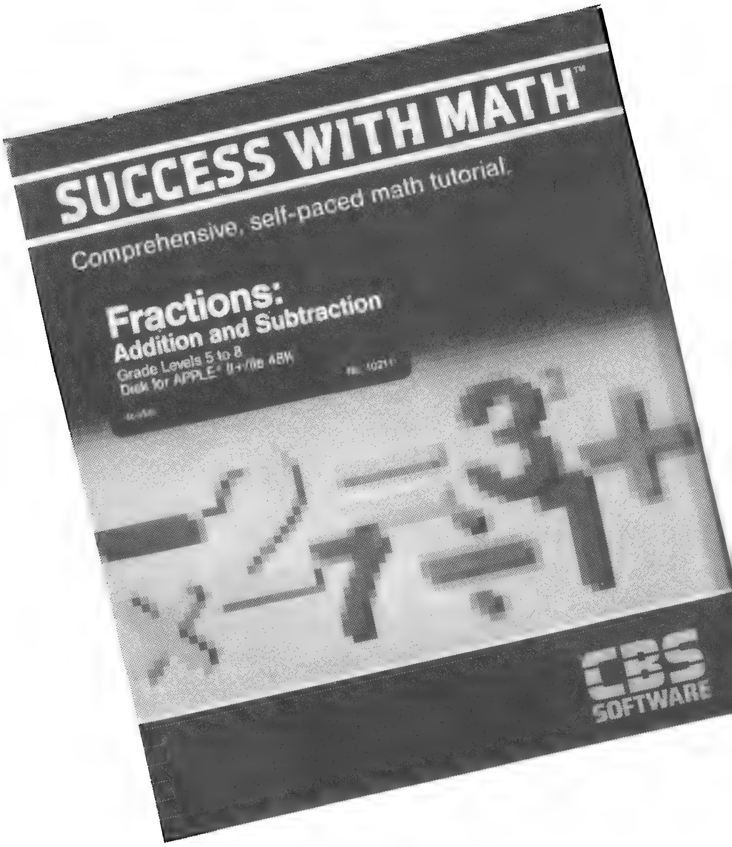
```
     FOR G = J1 TO C1 STEP K1:
         LET V = G:
         GOSUB 630:
         HPLOT 0,X TO 4,X:
         HPLOT 275,X TO 279,X:

     NEXT :
     FOR G = 1 TO F:
         LET Z = D(G):
         GOSUB 620:
         LET V = G(G):
         GOSUB 630:
         IF W - 1 < 0 THEN
             GOTO 570


540      IF W + 1 > 279 THEN
             GOTO 570

550      IF X - 1 < 0 THEN
             GOTO 570

560      HOME :
         HPLOT W,X + 1 TO W,X - 1:
         HPLOT W - 1,X TO W + 1,X


570  NEXT :
     VTAB 23:
     PRINT "...PLEASE WAIT....":
     FOR R = 1 TO 279 STEP 5:
         LET G = (R - 1) * (B1 - D1) / 279:
         LET L1 = A + L * G + N * G ^ 2 + O * G ^ 3 + P * G ^ 4
          + Q * G ^ 5 + U * G ^ 6:
         LET M1 = 279 / B1:
         LET N1 = 159 / C1:
         LET O1 = G * M1:
         LET L1 = L1 * N1:
         IF O1 > 0 AND O1 < 279 AND L1 > 0 AND L1 < 159 THEN
              HPLOT O1,159 - L1

580  NEXT :
     LET Z = G:
     GOSUB 620:
     IF S < J1 THEN
          LET S = J1

590  IF S > C1 THEN
          LET S = C1

600  LET V = S:
     GOSUB 630:
     INVERSE :
     VTAB 22:
     GOTO 400

610  TEXT :
     HOME :
     GOTO 170

620  LET W = 279 * (Z - D1) / (B1 - D1):
     RETURN

630  LET X = 159 * (1 - (V - J1) / (C1 - J1)):
     RETURN

640  IF P1 = 0 AND Q1 = 0 THEN
          PRINT "FIRST CHECK QUALITY OF INTERPOL.DATA":
         PRINT " THEN CHOOSE   >>>  >>>         (2).....":
         FOR G = 1 TO 3500:
     NEXT :
     GOTO 700

650  LET A$ =  CHR$ (4):
     PRINT A$;"PR£1":
     PRINT :
     HTAB 6:
     PRINT " >>  S U M M A R Y  <<":
     PRINT :
     FOR G = 1 TO F:
         PRINT G;:
         HTAB 4:
         PRINT "X = ";D(G);:
         HTAB 19:
         PRINT "Y = ";G(G):
     NEXT

655  PRINT :
     PRINT "      B  = ";B:
     FOR G = 1 TO M + 1:
         PRINT "A";G - 1; TAB( 23);C(G,M + 2):
     NEXT :
     PRINT :
     PRINT "      POLYNOM  ";M;".DEGREE"

660  PRINT

670  PRINT "COEFF.OF CORREL.   = "; SQR (B):
     PRINT "STANDARD ERROR     = "; SQR ( ABS (C / G)):
     PRINT "QUALITY OF REGRESS.= "; INT (100 * R1) / 100" % +-
     "; INT (100 * S1) / 100" % "

675  IF  LEN (H$) > 0 THEN
          PRINT :
         PRINT "FILE NAME = ";H$
```

```
676  PRINT :

     PRINT A$;"PREO":
     PRINT :
     INVERSE

680  PRINT " USE SAME DATA? THEN (1); NEW DATA? (2)":
     NORMAL :
     INPUT " STATIST.DATA ANALYS.(3)                 ";D:
     HOME :
     ON D GOTO 380,690,700


690  TEXT :
     HOME :
     CLEAR :
     GOTO 20

700  VTAB 10:
     HTAB 10:
     PRINT " .....PLEASE WAIT......":
     LET P1 = 0:
     LET Q1 = 0:
     FOR G = 1 TO F:
          IF G(G) = 0 THEN
               LET G(G) = 1E - 10:
     NEXT

710  FOR G = 1 TO F:
          LET E(G) = A + L * D(G) + N * D(G) ^ 2 + O * D(G) ^ 3
           + P * D(G) ^ 4 + Q * D(G) ^ 5 + U * D(G) ^ 6:
     NEXT :
     IF G$ = "LOGXY" THEN
          GOSUB 960

720  IF G$ = "K" THEN
          GOSUB 970

730  FOR G = 1 TO F:
          LET F(G) = 100 * ( ABS (E(G) - G(G)) / G(G)):
          LET P1 = P1 + F(G):
          LET Q1 = Q1 + F(G) ^ 2:
     NEXT :
     LET H = 22:
     TEXT :
     HOME :
     PRINT :
     PRINT "         ** S U M M A R Y **  ":
     PRINT :
     PRINT "N  X      Y(MEAS)   Y(CALC.)  DIFF.(%)":
     PRINT "----------------------------------------":
     POKE 34,5

740  FOR G = 1 TO F:
          VTAB H:
          PRINT G:
          VTAB H:
          HTAB 4:
          PRINT  INT (1000 * D(G)) / 1000:
          VTAB H:
          HTAB 12:
          PRINT  INT (1000 * G(G)) / 1000:
          VTAB H:
          HTAB 24:
          PRINT  INT (10 * E(G) + .5) / 10

750       VTAB H:
          HTAB 35:
          PRINT  INT (10000 *  ABS ((G(G) - E(G)) / G(G)) + .5)
           / 100:
          PRINT :
          PRINT :
     NEXT :
     LET S1 =  SQR ( ABS (Q1 - P1 ^ 2 / F) / (F - 1)):
     LET S1 =  INT (1000 * S1 + .5) / 1000:

760  PRINT " N = ";F" ;DEGR.POLYN. = ";M" ;B = "; INT (B * 1000
     000) / 1000000:
     HTAB 7:
     PRINT " REGRESSION QUALITY 'RQ':":
     INVERSE :
     HTAB 7

770  PRINT " 'RQ' = "; INT (100 * R1) / 100" % +- "; INT (100
      * S1) / 100" % ":
     NORMAL :
     HTAB 32:
     INPUT "(RETURN)";E$:
     IF E$ = "N" THEN
          END

780  PRINT :
     GOTO 390

790  PRINT " X-->LOG(X)? Y-->LOG(Y)? ENTER (X);(Y) ":
     PRINT :
     VTAB 23:
     HTAB 10:
     INPUT "";C$:
     VTAB 23:
     HTAB 22:
     INPUT "";D$:
     IF C$ = "X" AND D$ = "Y" THEN
          850
```

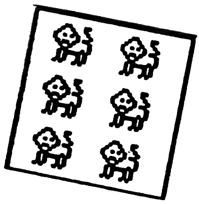
```
800  IF C$ = "X" THEN
          830

810  IF D$ = "Y" THEN
          840

820  IF C$ <  > "X" THEN
           RETURN

830  FOR G = 1 TO F:
          LET D(G) =  LOG (D(G)) /  LOG (10):
     NEXT :
     LET G$ = "LOGX":
     RETURN

840  FOR G = 1 TO F:
          LET G(G) =  LOG (G(G)) /  LOG (10):
     NEXT :
     LET G$ = "LOGY":
     RETURN

850  FOR G = 1 TO F:
          LET D(G) =  LOG (D(G)) /  LOG (10):
          LET G(G) =  LOG (G(G)) /  LOG (10):
     NEXT :
     LET G$ = "LOGXY":
     RETURN

860  TEXT :
     HOME :
     POKE 34,3:
     INVERSE :
     PRINT ">>> INTERPOL.     X(BASIS)  ;Y(CORREL) ":
     NORMAL :
     IF  LEN (G$) <  > 0 THEN
           INVERSE :
          PRINT "=> NOTE: LOG DATA TRANSFORMATION !!  <=":
          NORMAL

870  PRINT "STORE DATA TO DISK (Y); END PROGRAM (/)":
     PRINT "----------------------------------------":
     POKE 34,4

880  PRINT :
     INPUT " X = ";C$:
     LET W =  VAL (C$):
     IF (W > D(F) OR W < D(1) AND C$ <  > "/") THEN
          PRINT "* NOTE: DATA OUTSIDE CALCULATED RANGE! ";
        PRINT ""

890  IF G$ = "LOGXY" AND W = 0 THEN
          LET W = 1E - 20

900  IF (G$ = "LOGXY" OR G$ = "LOGX") THEN
          LET W =  LOG (W) /  LOG (10)

910  IF C$ = "/" THEN
          GOTO 390

920  IF C$ = "Y" THEN
          980

930  LET X = A + L * W + N * W ^ 2 + O * W ^ 3 + P * W ^ 4 + Q
      * W ^ 5 + U * W ^ 6:
     LET X =  INT (10000 * X + .5) / 10000:
     IF (G$ = "LOGXY" OR G$ = "LOGY") THEN
          LET X = 10 ^ X

940  PRINT "             Y = ";X:
     GOTO 880

950  GOTO 400

960  FOR G = 1 TO F:
          LET E(G) = 10 ^ E(G):
          LET G(G) = 10 ^ G(G):
     NEXT :
     RETURN

970  FOR G = 1 TO F:
          LET E(G) = 1 / E(G):
          LET G(G) = 1 / G(G):
     NEXT :
     RETURN

980  TEXT :
     HOME :
     PRINT " WANT TO STORE RAW DATA TO DISK?   (RD)":
     PRINT :
     PRINT " WANT TO CHANGE X AGAINST BASIS Y ?    ":
     PRINT " (X=CORRELATED TO Y!!)   ":
     HTAB 36:
     PRINT "(YX)":
     PRINT :
     HTAB 38:
     INPUT "";E$:
     IF E$ = "RD" THEN
          1030

990  IF E$ = "YX" THEN
          1020
```

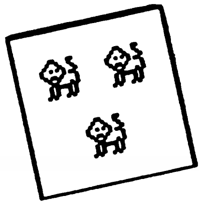
```
1000  IF E$ = "/" THEN
          870

1010  GOTO 980

1020  FOR G = 1 TO F:
          LET H(G) = D(G):
          LET I(G) = G(G):
          LET G(G) = H(G):
          LET D(G) = I(G):
      NEXT :
      HOME :
      PRINT "CHANGING Y->X TO X->Y   :":
      PRINT

1025  PRINT "N          NOW = X          NOW = Y":
      PRINT "---------------------------------------":
      FOR G = 1 TO F:
          PRINT G,D(G),G(G):
      NEXT :
      PRINT :
      PRINT :
      GOTO 160

1030  PRINT :
      PRINT "  DATA FILE NAME     = ":
      LET A$ =  CHR$ (4):
      PRINT "  ('?' FOR CATALOG)";:
      HTAB 26:
      INPUT "";H$:
      IF H$ = "?" THEN
           PRINT A$"CATALOG"

1040  IF H$ = "?" THEN
           PRINT :
          INVERSE :
          INPUT " FILE NAME = ";H$:
          NORMAL

1050  PRINT A$;"OPEN ";H$:
      PRINT A$;"WRITE ";H$:
      PRINT F:
      FOR G = 1 TO F:
          PRINT D(G):
          PRINT G(G):
      NEXT :
      PRINT A$;"CLOSE ";H$:
      PRINT :
      PRINT " END (/) ; CONTINUE (RETURN)":
      HTAB 25:
      INPUT "";E$:
      IF E$ = "/" THEN
           END

1060  GOTO 160


1070  PRINT :
      PRINT " (?) FOR CATALOG":
      INPUT " FILE NAME :     ";H$:
      IF H$ = "?" THEN
           PRINT A$"CATALOG":
          GOTO 1070

1080  REM


1090  PRINT :
      PRINT "N               X(I)            Y(I)":
      PRINT "---------------------------------------":
      PRINT A$;"OPEN ";H$:
      PRINT A$;"READ ";H$:
      INPUT F:
      IF F > 50 THEN
           LET F = 50


1100  FOR G = 1 TO F:
          INPUT D(G),G(G):
          PRINT G;:
          HTAB 15:
          PRINT D(G);:
          HTAB 30:
          PRINT G(G):
      NEXT :
      PRINT A$"CLOSE ";H$:
      RETURN

1110  END

1120  REM



END-OF-LISTING
```

Educating the Apple



It would seem that in the last issue I was a little too vocal about the lack of educational programs around, and the high prices asked. Some quite reasonable software materialized on my desk very promptly, primarily from CBS, but also from some small independent authors. The number ultimately became so great that I was forced to pass it all on! The person who will now be reviewing most educational items will be Lynne Ryder. Lynne is a highly experienced lady when it comes to education and computers and I look forward to many reviews from her in the future.





SUCCESS WITH MATH (SERIES) – Education

	– 1 disk, instructions.
Requirements	– DOS 3.3
Cost	– $29.95
Available	– Beagle CS

There are two considerations which must be made about any program before buying. These are the considerations of content and cost. Under content one can group such factors as flexibility, ease of use, presentation and actual material covered. Cost is the balance of this against other programs available. As the off-the-shelf program is not designed for your specific application, some compromise usually needs to be made.

I received three programs in this series and before speaking of each specifically, would like to give some general impressions.

The programs are not deep in the sense that they do not teach mathematical concepts, but they do however give the student a selection of randomly generated problems and guide through practice. This means that the student is never far from the correct answer, even though he/she may have no clue as to how to tackle the problem in the first place. There is feedback on individual performance, which is a must if the student is to work without guidance, and this comes under a series of categories:

1. procedural errors
2. computational errors
3. area specific errors

Unfortunately these are not stored to disk and so if these programs are to be used in the classroom situation, the teacher needs to be handy.

Fractions: Addition and Subtraction

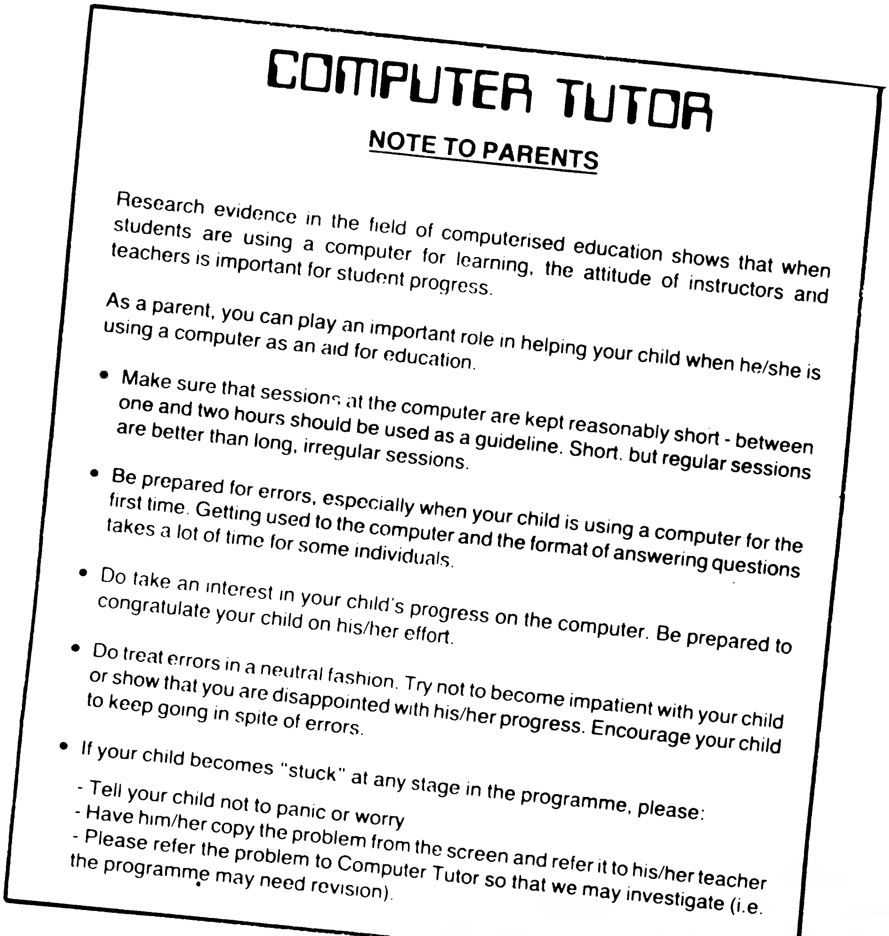
This is a program aimed at upper primary/lower secondary pupils. It presents a user determined number of problems. The author was dubious as to the ability of students to persevere with any more than nine problems, because if you select a number larger than nine you are prompted with the message "do you really want ++ problems (y/n)?". I daresay some would be tempted to say "we don't want any!"

The program then gives the user the chance to add or subtract fractions with unequal denominators. The basic knowledge that would be required is:

1. numerators & denominators
2. prime numbers
3. lowest common denominator

so don't believe these programs can replace the old dependable teacher.

One point about the program is that the text is in upper/lower case even on an Apple II+ and the screens are well laid out. The major disadvantage of the program, apart from result storage, is that a printer is not supported – I saw the added use to the teacher of generating examples in print, but with a copy protected disk it is difficult to add the extra few lines.



COMPUTER TUTOR

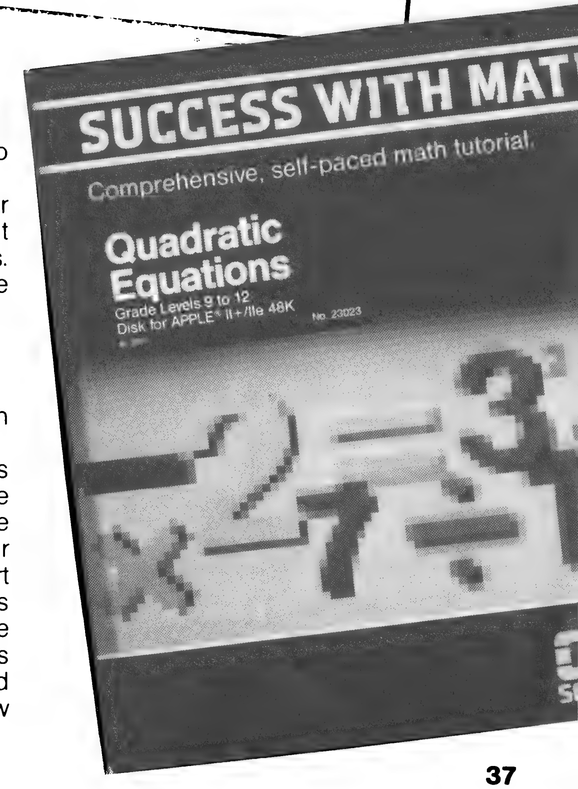
NOTE TO PARENTS

Research evidence in the field of computerised education shows that when students are using a computer for learning, the attitude of instructors and teachers is important for student progress.

As a parent, you can play an important role in helping your child when he/she is using a computer as an aid for education.

- Make sure that sessions at the computer are kept reasonably short - between one and two hours should be used as a guideline. Short, but regular sessions are better than long, irregular sessions.
- Be prepared for errors, especially when your child is using a computer for the first time. Getting used to the computer and the format of answering questions takes a lot of time for some individuals.
- Do take an interest in your child's progress on the computer. Be prepared to congratulate your child on his/her effort.
- Do treat errors in a neutral fashion. Try not to become impatient with your child or show that you are disappointed with his/her progress. Encourage your child to keep going in spite of errors.
- If your child becomes "stuck" at any stage in the programme, please:

- Tell your child not to panic or worry
- Have him/her copy the problem from the screen and refer it to his/her teacher
- Please refer the problem to Computer Tutor so that we may investigate (i.e. the programme may need revision).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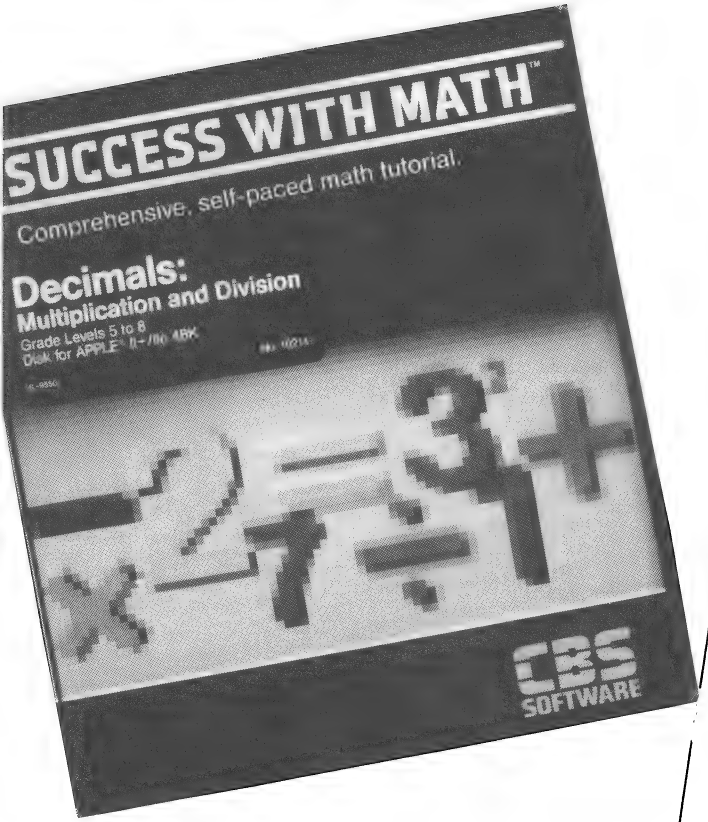
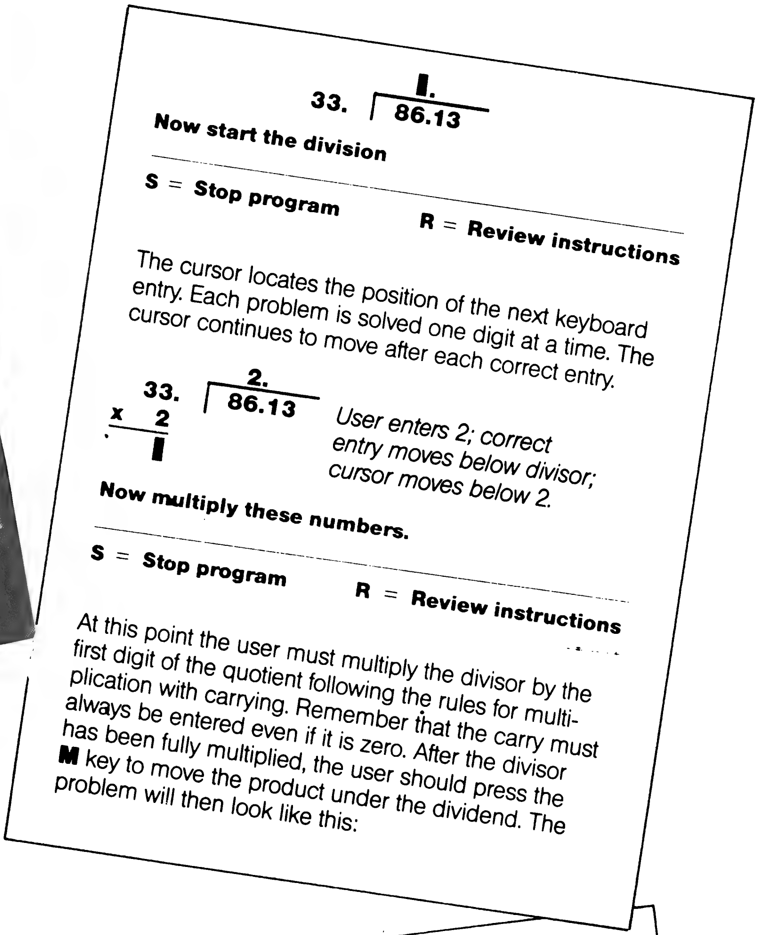
Comprehensive, self-paced math tutorial.
Quadratic Equations
Grade Levels 9 to 12
Disk for APPLE® II+/IIe 48K
No. 23023


SUCCESS WITH MATH™
Comprehensive, self-paced math tutorial.
Decimals:
Multiplication and Division
Grade Levels 5 to 8
Disk for APPLE II+/IIe 48K
CBS SOFTWARE

Decimals: Multiplication and Division

This program is aimed at upper primary/lower secondary, and of the three programs Decimals has the greatest amount of student direction. If the student is not familiar with decimal procedures, the general instruction section gives reasonably comprehensive guidance. The "Practice of decimal placement" section also provides some teaching prior to the student actually attempting the problems (again randomly generated).

I was a little worried about "carrying" and so the relevent section of the "manual" is presented.



```
        ▮.
33. ⌐ 86.13
```

Now start the division

S = Stop program **R = Review instructions**

The cursor locates the position of the next keyboard entry. Each problem is solved one digit at a time. The cursor continues to move after each correct entry.

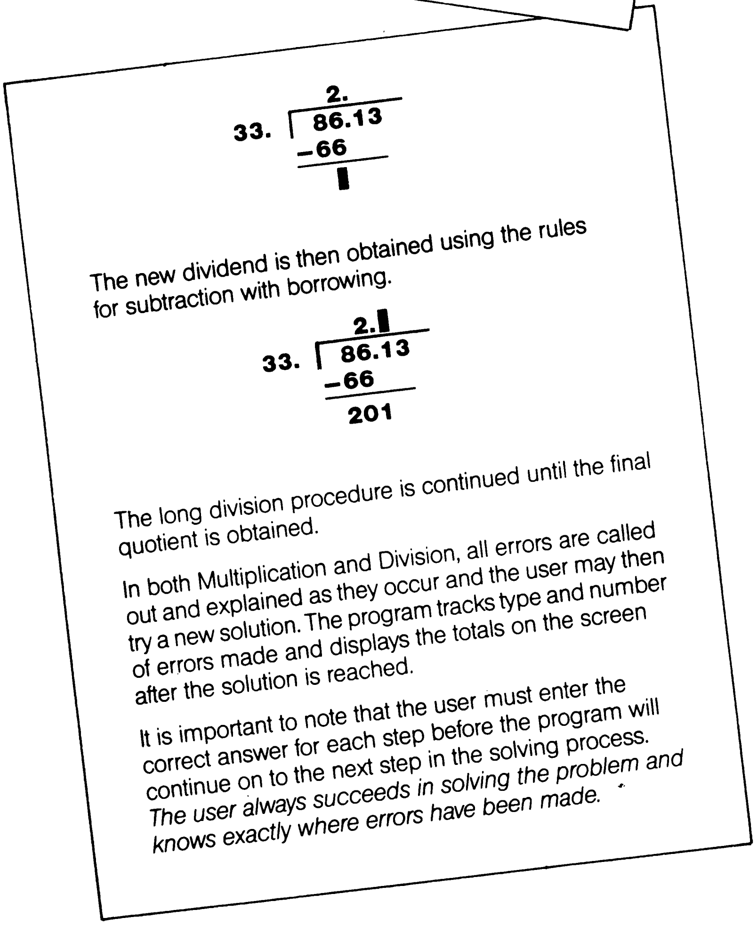
```
        2.
 33. ⌐ 86.13
x 2
  ▮
```

User enters 2; correct entry moves below divisor; cursor moves below 2.

Now multiply these numbers.

S = Stop program **R = Review instructions**

At this point the user must multiply the divisor by the first digit of the quotient following the rules for multiplication with carrying. Remember that the carry must always be entered even if it is zero. After the divisor has been fully multiplied, the user should press the **M** key to move the product under the dividend. The problem will then look like this:



```
        2.
33. ⌐ 86.13
      -66
        ▮
```

The new dividend is then obtained using the rules for subtraction with borrowing.

```
        2.▮
33. ⌐ 86.13
      -66
      201
```

The long division procedure is continued until the final quotient is obtained.

In both Multiplication and Division, all errors are called out and explained as they occur and the user may then try a new solution. The program tracks type and number of errors made and displays the totals on the screen after the solution is reached.

It is important to note that the user must enter the correct answer for each step before the program will continue on to the next step in the solving process. *The user always succeeds in solving the problem and knows exactly where errors have been made.*

The cursor is used directly in the problems and this gives the program the feel of working on paper. Areas of difficulty are noted as in the previous program and errors scored under:
1. multiplying/carrying
2. adding/carrying
3. decimal point position

Quadratic Equations

This program is aimed at mid to upper secondary. There is adequate instruction as to the format of answer entry and a sample problem is worked through. Unfortunately, the author believes that once students are older than lower secondary, upper/lower case display is no longer required. This gives the sceens a slightly bland look – 40 COLUMN, UPPER CASE, STRAIGHT II PLUS APPLE.

As a top end program, the assumption is that the teaching has already been done and the objective here is to reinforce with drill and practice. Errors are monitored as in the other programs in the series, and help is provided if wrong answers persist.

The program works very well and the students whom I asked to try it were able to work without any guidance.

General Conclusion:

The major annoyance I found to be the manuals. They are a little cheap and could easily be thrown out with the packing. The best feature would have had to have been the ease of use, however why no ability to keep scores? There certainly would be more than enough room on the disk.

Returning to my original points about balancing content and cost, I would say that the Success with Math series is quite good value.

COMPUTER TUTOR

COMPUTER TUTOR (SERIES) – Education
– 3 disks, instructions
Requirements – DOS 3.3
Cost – $69.95
Available – Beagle CS

It is good to see Australian software being promoted by CBS. Computer Tutor is a program that I feel will benefit greatly from this association.

Before I speak of their two programs for the Apple, I must say that I have read the review of the algebra program in the Australian Commodore Review. The program was very harshly received, and I can see the reason why. John and Mary-Anne Paynter are not people whose primary concern is gloss. Their programs are written to teach late secondary to adult, and, as such bear a striking resemblance to books without pictures in a children's library. In fact one could go so far as to say that the programs look boring.

To most this would be an accurate summation of Computer Tutor. To the few, it is not.

Computer Tutor is highly motivating and anything but boring to the student who WANTS to learn, or has a parent who is consistent enough to motivate at least 85% of the time. So how does one review these programs? The answer I think is in unemotionally applying the content to cost algorithm.

English Sentence Construction

This program comes on three disks and covers the following areas:
1. simple sentence
2. compound sentence
3. modifying with adjectives and adverbs
4. modifying with adjectival phrases
5. modifying with adverbial phrases
6. modifying with appositive and participial phrases
7. adjectival clauses
8. adverbial clauses
9. noun clauses

Readers are excused for not knowing what each of these areas entails.

The exercises are highly structured with answers not being given as in the "Success" series. The leaflet states that learners can progress at their own pace and completion of each unit will give both the slow learner and the fast learner the same standard of achievement. Although the means suit the theory, it should be evident that the "slow learner" is not going to be placed in the position where he/she needs to know about "modifying with appositive and participial phrases". The fast learner on the other hand will devour this and probably use it.

The learning feedback in Computer Tutor is very good. Errors are stored and weak areas reinforced. Here the program is difficult to fault. The criticism I have is that only four or five student records are kept per disk, so if you have a class and you want them all to work at it, you must purchase several disks!

Basic Arithmetic and Algebra

The format of this program is the same as for English, and the same comments are as relevant here as above, even to the extent of suitable age groups. The areas covered are as follows:
1. integers
2. rational numbers
3. fractions
4. multiplication and division of fractions
5. decimals
6. operations with surds
7. algebra – simplification
8. algebra – factorization
9. algebraic fractions
10. equations – linear – quadratic – simultaneous
11. linear inequalities

In math more so than in English, the pupil must have a very good idea of what they are doing. The Tutor will hone.

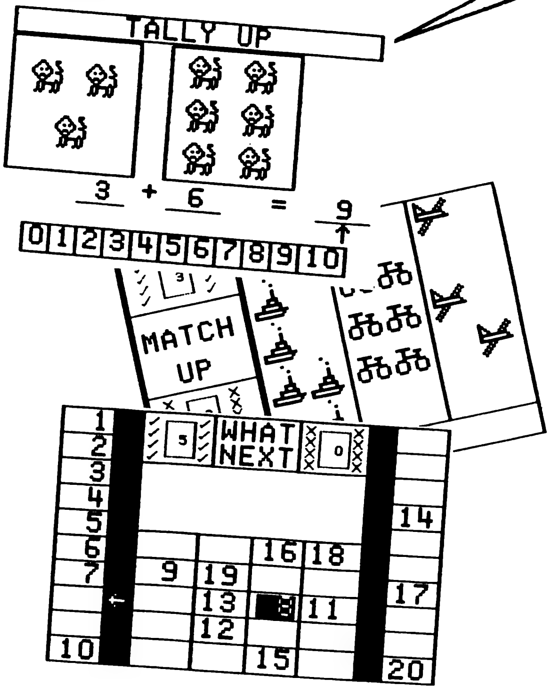
Error checking and feedback are as for English.

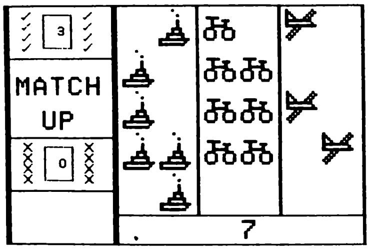
My criticisms refer to both programs and are quite minor in view of what the Tutors can achieve. Firstly, the disks are highly protected. This was to the point that they would not boot on my slimline drive. On my old Apple drive there was no problem, but John, remember the more protection you put on a disk, the more you are enticing people to have a try at cracking!

Secondly, why no lower case in the English? Surely it would have been worth the effort. Thirdly, a personal hate. To me a menu is something one gets through quickly in order to go somewhere more interesting. You can not tell me that there is any reason why I should go back and type "YES" instead of "Y"!

But these are trivial criticisms and my opinion of the Computer Tutor is that it is excellent value for money software, providing you have a suitable student to run it on. Keep it up, John and Mary-Anne.

EUREKA





MATHSMASTER 1 and 2 – Education
– 1 disk each, manual.
Requirements – DOS 3.3
Cost – $39.50
Available – Eureka Software or Beagle CS

Mathsmaster 1 and Mathsmaster 2 are two programs aimed at the younger child. They are the creative work of Robert and Cecilia Perrott from Queensland and I must say that the programs are impressive.

Reminiscent of Eduware's "Counting Bee", the Mathsmasters assume that the child can be taught two keys; the SPACE BAR and RETURN. There are four activities per disk and a simple game. Disk 1 has the following:

1. numeral match
2. match up
3. what next
4. one two
5. number nabber

and Disk 2:

1. tally up
2. take away
3. zero
4. puzzles
5. where is it

In order to answer the problem posed, the child presses the space bar until the chosen numeral is highlighted and then hits RETURN. Although this approach is widespread, I would have preferred the option to allow children to enter the number direct. As the numbers used are from 0 to 10, some children should be able to enter the number from the keyboard.

The activities show thought, and the graphics have a professional touch about them. On disk 1, the reward game is "Number Nabber" which is, Gene tells me, a simplified version of the arcade game "Suicide". It requires the use of the arrow keys, and even children who lack dexterity can through random movement achieve some score.

Disk 2 is aimed at a slightly older child, and I particularly liked the activity "Puzzles". Here a number sentence is presented using simple text. Incidentally, the program displays upper and lower case on all Apples and the text is easy to read.

There is error checking of child responses, but no storage of results. Perhaps with children of that age it would be trivial, but I feel that children should have some time on the computer without the parent hovering around – even at that age! Storage of results would at least show you that the child was making valid responses.

At the expense of appearing monotonous, I felt that the Eureka programs were very good for the age group they were aimed at and if this is the first offering from Eureka, then I am sure they will be very successful with their software. My main criticism was the same as for Computer Tutor – the disks are copy protected and will not boot from my slimline! Most annoying. ☐

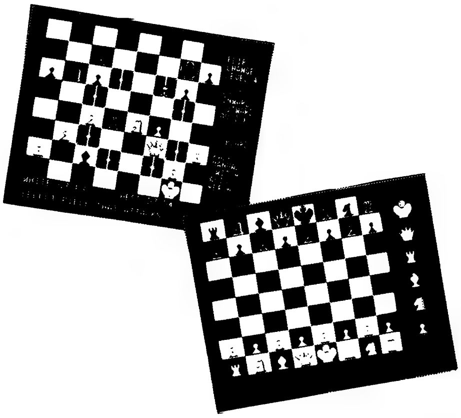
Bits 'n' pieces

How About a Nice Game of Chess?

No thanks, I'll stick to Sargon or draughts! Remember that small, insignificant, hardly worth mentioning bug? Well, the bottom line is that if you have a II+ forget this one. Things do get better if you have a IIe. With the mouse it's OK. Without a mouse, here's what to do.

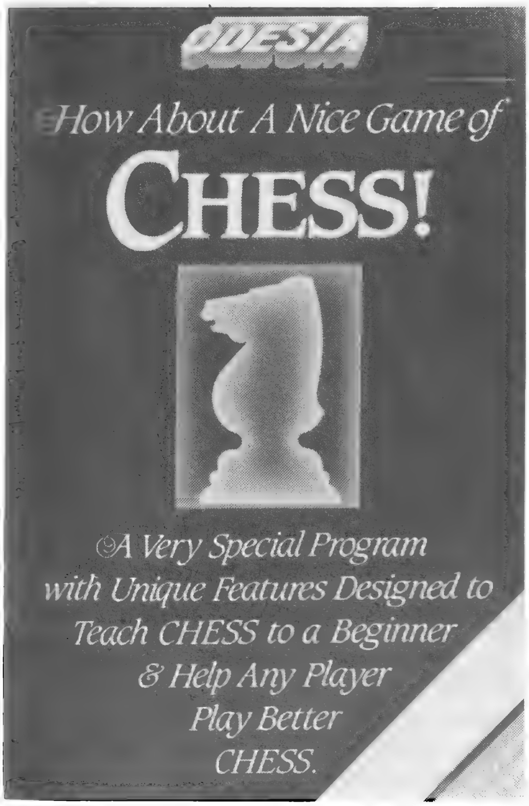
1. Boot
2. CLOSED APPLE RESET (into test)
3. When the Kernel's OK, RESET
4. Now, choose the non-mouse mode.

All that I can say is . . . amazing.



Problem Solving

Although I am told that BEAGLE Comp. Serv. – their mail order catalog is unmissable in this issue and has been booked for the rest of the year (makes me happy) – will be getting some of this software in, here is an address: CONDUIT, P.O. Box 388, Iowa City, IA 52244. CONDUIT put out a program called SURFACE for the APPLE II. It's education. Specifically, it's a 3D graphics package for use whenever characteristics of the graphs of functions in two variables



are studied. All that students need to do is enter the function in the form z=f(x,y) and off it goes.

MacC

After receiving Andy's review of AZTEC C65, I spoke with Ken Guntar of CompuMusic. Ken, a highly excitable fellow, could not wait to tell me that he has a C compiler for the Mac – AZTEC C68.

C68 apparently allows full access to Macintosh ROM and OS routines, and the package includes the Compiler, Assembler, Linker, Resource manager, Text editor, SHELL, Libraries and sample programs and utilities (he said it all in one breath).

Win a Book

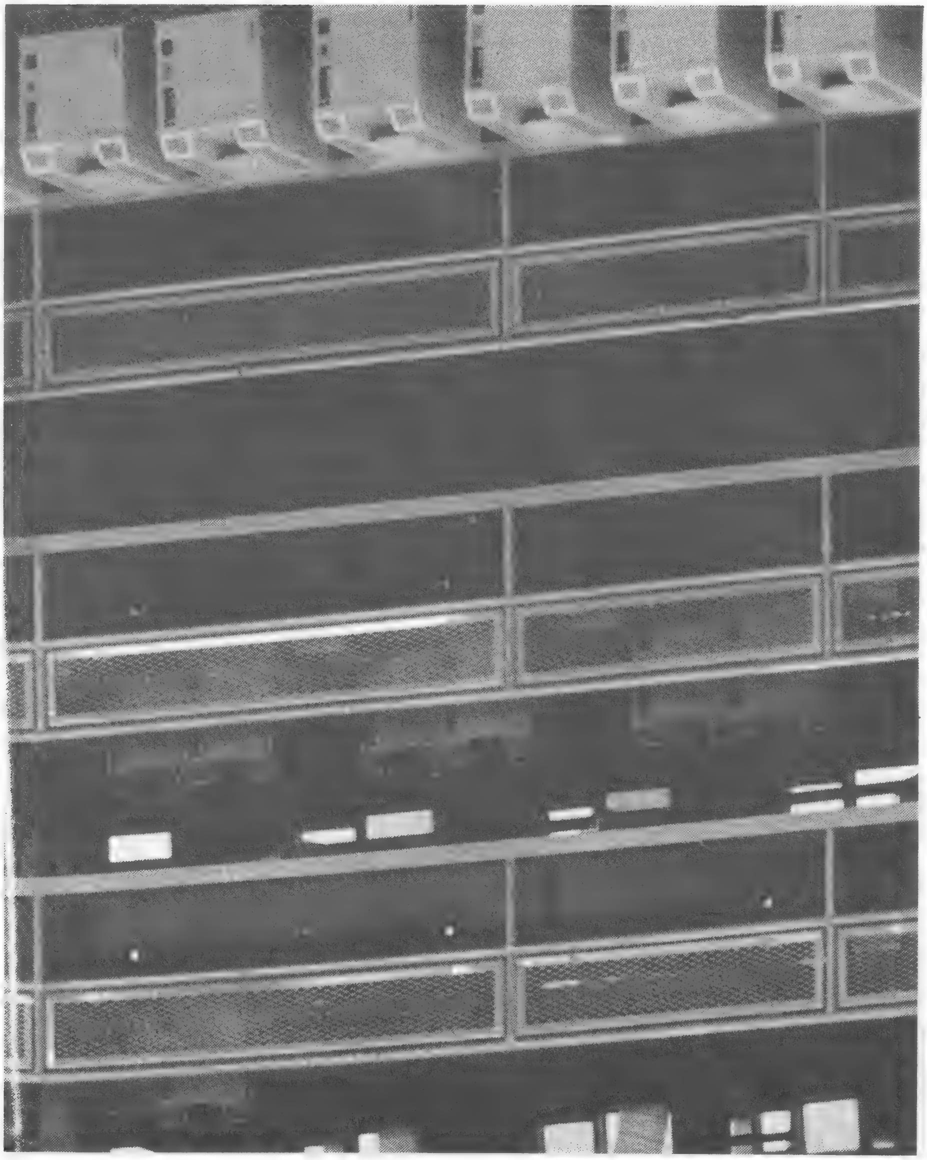
I have already received a number of entries for last month's WIN A BOOK, and the winner will be named in next month's Bits n' Pieces. This month's problem requires no programming. Have a good look at the pic. and write in 10-20 words or less, exactly what you think is depicted here. First correct entry opened on 7th April gets the book. No, it's really very easy!

Awsome

AUSOM (Apple Users Society Of Melbourne) produce a very good newsletter which can be obtained from AUSOM, PO Box 43, Forest Hills, Vic 3131 for $25 plus postage per year. Surprise of surprises to find that CP/M is alive south of the border – quite a substantial portion of the latest issue is devoted to the Z80!

Cooked Apple?

Have a compat (or real one) that doesn't work? Hills Industries have doubled their service staff (now there are two?). All that I can say is that I am beginning to have some idea as to why Gareth grits his teeth when he reads press releases. Let me share a sentence with you – "Micro-computer servicing, however, is a much more complex area (than fixing TVs) and we also operate a prompt drive-in service for home computers, video games machines and the more complicated equipment used by businesses." I think that Barry Jones is too late with his commission – now our highly sophisticated and extremely complex little Apples can go to the drive-ins! □



Coming up next month

Due to space limitations this month, "Expose Yourself" will start from the April issue – with one minor change. Initially, I envisaged that I would be doing the writing following "in depth interviews". Unfortunately I quickly saw that only the surface could be scratched in the short amount of time spent talking to an individual or a group such as the Baileys. Far better, thought I, to let them talk about themselves at their own pace. If you are interested in Exposing, then send to me the following:

Expose Yourself

Due to space limitations this month, "Expose Yourself" will start from the April issue – with one minor change. Initially, I envisaged that I would be doing the writing following "in depth interviews". Unfortunately I quickly saw that only the surface could be scratched in the short amount of time spent talking to an individual or a group such as the Baileys. Far better, thought I, to let them talk about themselves at their own pace. If you are interested in Exposing, then send to me the following:

1. A photograph
2. General background info:
   - name, address for contact
   - how long you've been into Apples
   - why you started doing what you do
   - the size of your operations
   - what you have done
3. The Future:
   - where you are going and how
- you see yourself
   - getting there.

There are however two limitations I must impose. Firstly, a size constraint. Though we would love to know the name of the pet cat who walked over your disks the night the light bulb flashed, space necessitates a 300-350 word limit.

Secondly, this section is for personal exposure of Australian authors and developers. It is personal advertising, so other people will know that you exist. It is not however a section for specific product advertising. If you would like to do that, Brenda would be only too happy to supply rates!!

Apple IIc CP/M

They said it couldn't be done, but it appears that a small company in Sydney is approaching just that.

More Communications

Several products new and old up for review. Plus ** Paul Zabrs ** our own "TERMINAL MAN" continues.

Gareth's back

Many readers may be sighing with dismay at the lack of silver tongued articles and moving fingers in this issue. Gareth – ever after a story – has been in Europe and Asia for the past few weeks, but should be writing again in the next issue. ☐

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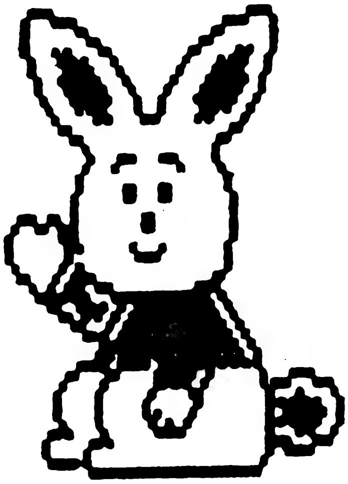


An advertisement this size in the DEALER DIRECTORY costs only $45 per issue or $35 for more than one issue.

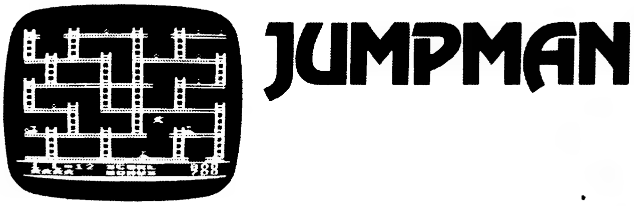
Many of our readers ring us up to find out where they can buy Apple software and hardware.

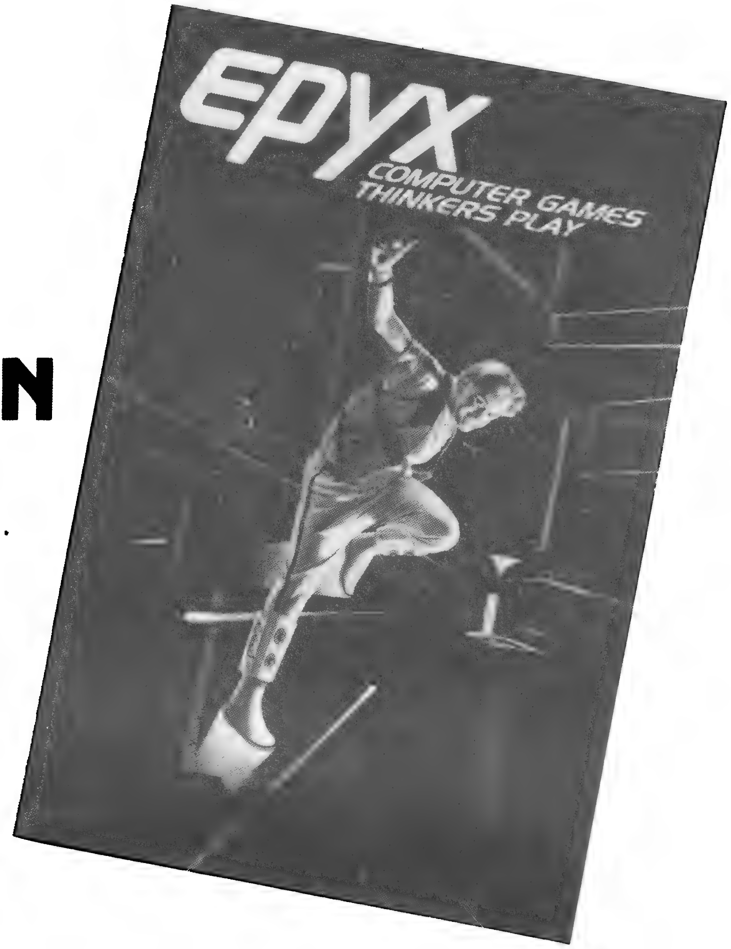
Let them know where you are and what you have to offer.

Phone Tina or Brenda on 398 5111 to book a space.

Dealer Directory

Jumpman versus Loderunner





JUMPMAN:	**Arcade 1 disk (uses back), instructions**
Requirements:	**DOS 3.3**
Cost:	**$39.95**
Available:	**Beagle CS**

Jumpman is not a brand new game. It's been around a while in the States and has developed a type of cult following reminiscent of Loderunner. There are however many differences between the two games and that is why I think both can co-exist in your software library – unless of course you're an indecisive sort of person who would have immense difficulty in deciding which to play when!

The aim in both games is to collect all the gold or explosives on the particular level or board and by so doing proceed to the next. For those who are unaware of these games, a degree of strategy must be employed against the opponents; you can not adopt Space Invader/Galaxian mentality in order to succeed.

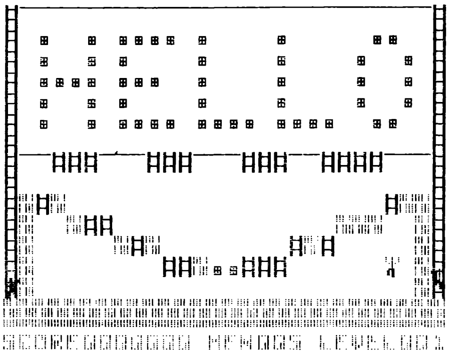
ACTION	LODERUNNER	JUMPMAN
Aim to collect	gold	explosives
Is able to jump	NO	YES
Is able to fall	YES	NO
Is shot at	NO	YES
Can kill adversaries	YES	YES
Number of screens	can create	30
Regularity of particular screen	YES	YES
Regularity of adversaries	YES	some random
Speed (difficulty) levels	NO	YES

By looking at the table, it is clear that Jumpman is more arcade in that decisions have to be made far quicker. In Loderunner you can stand at a particular point on the board and experience complete safety while you think out your next move – there are havens everywhere. In Jumpman you can't even go up and down the same rope!

So which is better? Graphics-wise, I'd say Loderunner, but . . . certainly for action, Jumpman is faster. The other consideration is replayability. Once I've been there and done that, the games usually hold about as much interest as dead fish. For me, it's SOLVING rather than POINTS – if it's the same for you and you've done Loderunner, then I doubt you'll be disappointed.

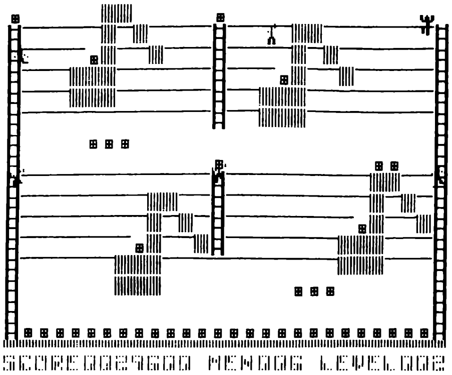
Loderunner and Jumpman clinic

One may be excused for thinking that the AAR is becoming a medical journal. In some ways perhaps this section may aid in the mental well-being of many who own Championship Loderunner and/or Jumpman and who have not yet seen all the levels. But how do you give clues without giving the game away? I don't think you can, so please only use this as a last resort. After all there is nothing more annoying than to be stuck on a level and never being able to see the next...



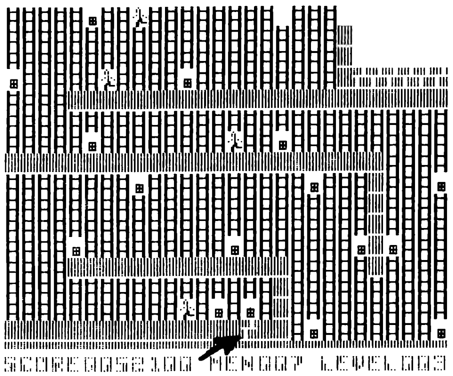
Loderunner Screen #1

The problem here is in the two low barrels. You can't go down to them because you'll be trapped. The solution is to get the men to bring them out. But, if you go low, the men get trapped themselves and not always (snigger snigger) with a barrel. Your objective is therefore to release them and then make them drop at the most opportune time. Incidentally, the men can be killed down there, and certain individuals around the office delight in inflating their otherwise unimpressive scores in this most ungamely way.



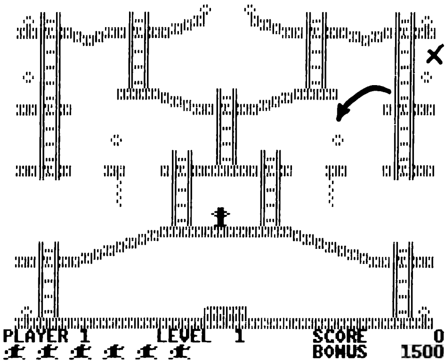
Loderunner Screen #2 (Music Maestro)

The clue to this level is to get the men onto one side, and preferably not the side you are on. This is easily achieved by standing on particular rungs of the side ladders. From then on it's all in the leg work.



Loderunner Screen #3 (Ladders Galore)

Speed and nerves of steel are the keys to success. The trickiest bend is the first – but don't be afraid to go in the opposite direction to that in which you are drawn. After that you can get rid of ALL the men, one by one. The solution is in the screen. I have marked where you should dig – but don't do this too early or too late as that will encourage disaster.



Jumpman Screen #1 (Easy Does It)

The key to this screen is in the second last bomb you collect (marked with a X). When you have it, a portion of the ladder below you breaks away. Go down and JUMP! So what if it looks like certain death. Your leap should get that last explosive, and getting that will move you – believe it or not – to level two. ☐

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Mini Memo Pad Program

by Errol Chopping

The Mini-memopad is a very simple, unstructured database program. It allows you to store any information you can type.

Most computer filing systems require you to define exactly what information you wish to record before you start entering it. You have to define the structure of the file you are creating by specifying the number and length of the **fields** (categories) under which you want to record data.

For example, if you are creating a file to hold data about your wine collection you would probably set up field headings such as COMPANY, WINE, GRAPE, TYPE, VINTAGE, QUANTITY IN STOCK etc and then enter the appropriate data next to these headings for each wine in your collection.

It would be absurd to think you could use that same wine file to record other information not related to wine. It would be hard to record names and addresses or household expenses in the wine file because its field headings are suitable for only one type of data.

Although **structured** files have certain advantages like sorting and editing, there is a place for a memo-pad type program. It allows you to store information any way you like.

The listing presented in this article is the bare minimum for such a program. I have tried to keep it as simple as possible so you can type it in and use it with a minimum of time and effort. If you are not interested in learning how the program works just skip the explanations. If you work through my notes and type in the code as you go however, you will understand the program and then be able to improve it yourself if you wish.

Overall view

To store a memo you first have to enter a descriptive title for it. (The titles are used later when you are searching for information.)

Then simply type the memo as if you were using a typewriter (or very simple word processor). You use the left arrow key to move the cursor back over typing errors and when you are finished using the memo, press the ESC key to have it recorded on disk.

To retrieve a memo you first enter a **keyword**. The program will look through all the titles of all the memos and display those which contain the keyword. You then choose the title you want and the memo is displayed on the screen.

MODULE 1 (DEFINE VARIABLES AND READ ITEM FILE)

```
10  REM DEFINE VARIABLES 10-90
-------------------------------

12  HIMEM: 24575
20  DIM T$(50)
30  DIM P(50)
40 BUFFER = 24576
42  ONERR  GOTO 80
45  PRINT  CHR$ (4)"VERIFYITEMFILE"
50  PRINT  CHR$ (4)"OPENITEMFILE"
55  PRINT  CHR$ (4)"READITEMFILE"
60  INPUT N
65  FOR I = 1 TO N
70  INPUT T$(I)
75  NEXT I
80  PRINT  CHR$ (4)"CLOSEITEMFILE"
90  REM
```

We are going to store the text of each memo in an area of memory beginning at location 24576. HIMEM is just below this so Applesoft's string variables will not invade this storage area.

The string array T$(50) will hold the titles and P(50) will be used as an index to record which titles are found during a search later on in the program.

(Lines 42-80) The text file ITEMFILE will hold the titles on disk so we now check to see if any have been stored and if so read from the text file the value of N (number of titles) and read each title into the array T$().

MODULE 2 (MENU)

```
100  REM MENU 100-300
---------------------

110  HOME
120  VTAB 10: PRINT "1...STORE"
130  VTAB 12: PRINT "2...RETRIEVE"
140  VTAB 14: PRINT "3...QUIT"
150  VTAB 21: PRINT "ENTER 1,2 OR 3 ";
160  INPUT A$
170 A =  VAL (A$)
180  IF A < 1 OR A > 3 OR A <  >  INT (A)
190  REM                            THEN 150
200  IF A = 1 THEN 1000
210  IF A = 2 THEN 5000
220  END
230  REM
240  REM
```

The module above is a simple menu. It asks the user to select an option numbered 1,2 or 3 for STORE, RETRIEVE or QUIT. Line 180 checks that choice actually typed is a whole number from 1 to 3.

MODULE 3 (ENTER TEXT AND STORE IT)

```
1000  REM STORE 1000-
---------------------

1010  HOME
1020  PRINT "ENTER THE TITLE ";
1030  INPUT A$
1040 A$ =  LEFT$ (A$,35)
1050  HOME
1060  PRINT A$
1070 PNTER = BUFFER
1080  GET C$
1090  IF C$ =  CHR$ (27) THEN 3000
1098  REM
1099  REM
1100  IF C$ =  CHR$ (8) THEN  GOSUB 10000:
1101  REM                           GOTO 1080
1102  REM
1110 AS =  ASC (C$)
1120  POKE PNTER,AS
1130 PNTER = PNTER + 1
1140  PRINT C$;
1150  GOTO 1080
```

Here you are asked to enter a title which line 1040 reduces to at most 35 characters. The variable PNTER in line 1070 keeps track of where in memory each character you type in the memo will be stored.

The loop from lines 1080 to 1150 collects each character. If you type "ESC" (CHR$(27)) the program jumps down to the module at 3000 where the memo and title are saved onto the disk.

If you type the left arrow (CHR$(8)) the subroutine at 10000deletes the last character typed and moves the cursor back one position on the screen.

```
10000  REM HANDLE BACKSPACE
---------------------------

10010  IF PNTER = BUFFER THEN  RETURN
10020 PNTER = PNTER - 1
10030  PRINT C$ + " " + C$;

10040  RETURN
```

Lastly (lines 1110-1150), the ASCII code of each character of the data you type is poked into the storage buffer and the PNTER is increased by one.

MODULE 4
(SAVE DATA ON DISK)

```
3000  REM DISK SAVE
--------------------

3010  REM
3015  IF PNTER = BUFFER THEN 100
3020  IF N = 50 THEN 100
3025 N = N + 1
3030 T$(N) = A$
3040 F$ = "MEMO." +  STR$ (N)
3050 L = PNTER - BUFFER
3055  PRINT
3060  PRINT  CHR$ (4)"BSAVE"F$",A"BUFFER",L"L
3070  PRINT  CHR$ (4)"OPENITEMFILE"
3080  PRINT  CHR$ (4)"WRITEITEMFILE"
3090  PRINT  RIGHT$ ("00" +  STR$ (N),3)
3100 ·PRINT  CHR$ (4)"APPENDITEMFILE"
3105  PRINT  CHR$ (4)"WRITEITEMFILE"
3110  PRINT T$(N)
3120  PRINT  CHR$ (4)"CLOSEITEMFILE"
3130  GOTO 100
```

For beginner programmers, this module may be a little difficult. Firstly the program checks if either no data has been typed (PNTER=BUFFER line 3015) or if 50 memos have already been stored (line 3020).

We then increase the number of memos N, store the title A$ in the array T$()and calculate the length of the memo in bytes L.

The variable F$ is used to hold a DOS filename for the memo. It consists of the word 2MEMO. plus a number which indicates which memo it is (line 3040).

Now the memo is stored on the disk as a binary file (line 3060) and the textfile ITEMFILE is updated to hold the correct number of titles and the new title. This is the file that is read at the very beginning of the program.

MODULE 5
(RETRIEVE AND DISPLAY MEMO)

```
5000  REM RETRIEVE 5000-
-----------------------
           .
5080  HOME
5090  PRINT "ENTER KEYWORD ";
5100  INPUT K$
5105 K =  LEN (K$)
5108 FLAG = 0
5109 C = 0
5110  FOR I = 1 TO N
5120  FOR J = 1 TO  LEN (T$(I))
5130  IF K$ =  MID$ (T$(I),J,K) THEN  GOSUB 9000:J =  LEN (T$(I))
5140  NEXT J
5150  NEXT I
5160  IF FLAG = 0 THEN  PRINT "NONE FOUND": GET A$: GOTO 100
5170  PRINT
5180  PRINT "WHICH ONE ";
5190  INPUT A$
5200 A =  VAL (A$)
5210  IF A < 1 OR A > C OR A <  >  INT (A) THEN 100
5220  HOME
5230 F$ = "MEMO." +  STR$ (P(A))
5240  PRINT  CHR$ (4)"BLOAD"F$",A"BUFFER
5250 L =  PEEK (43616) + 256 *  PEEK (43617)
5260  FOR I = BUFFER TO BUFFER + L - 1
5270 AS =  PEEK (I)
5280  PRINT  CHR$ (AS);
5290  NEXT I
5300  PRINT
5310  PRINT "PRESS ANY KEY";: GET A$
5320  GOTO 100
```

To retrieve a memo we enter a KEYWORD which is used to search through all the titles (line 5090). We use the loop from 5110 to 5150 to go through each title checking for a match with the keyword.

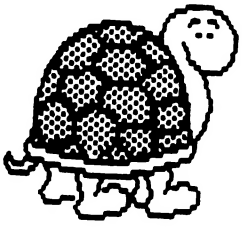
The inner loop from 5120 to 5140 actually does the comparisons. It compares the keyword with each segment of the title using the MID$ (statement.

If a match is found, the subroutine at 9000 increases the counter C by one, stores the title number in the index array P() and prints the title on the screen. The variable FLAG is set to one if our search is successful.

```
9000  REM PRINT TITLE
--------------------

9010 C = C + 1
9020 P(C) = I
9030 FLAG = 1
9040  PRINT C TAB( 4)T$(I)
9050  RETURN
```

The lines 5240 and 5250 then load the correct binary memo file into memory and get the length in bytes from special locations in DOS (line 5250). The loop from 5260 to 5290 then displays the memo on the screen and returns you to the menu. ☐



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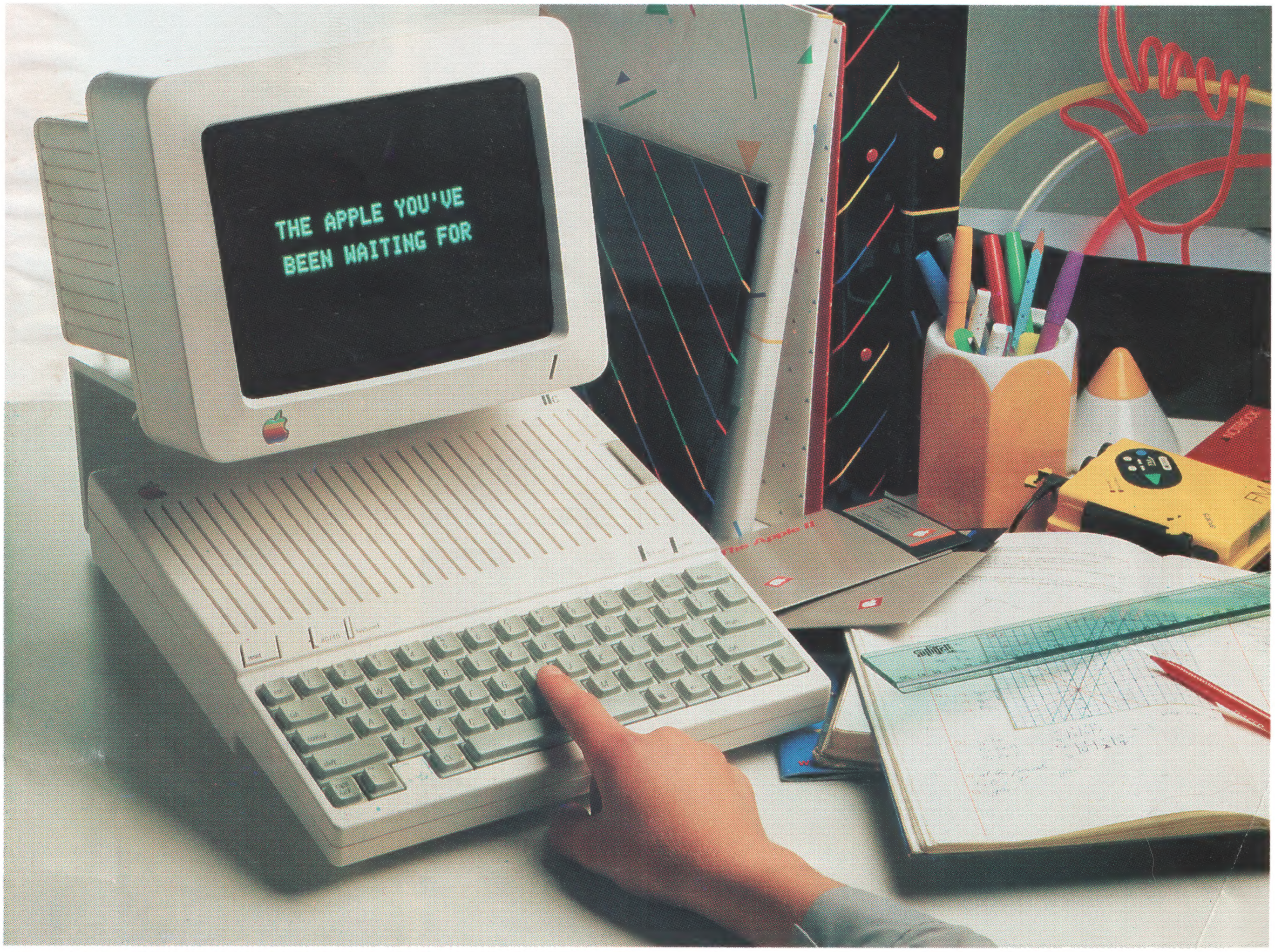

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